5/22/71

THE
MEDICAL JOURNAL
OF AUSTRALIA

IN TWO VOLUMES ANNUALLY

DS/28

The following issue(s) is/are missing and unobtainable ....

....

Nos. 5, 9, 13-24

....

Date of collating 7.2.72

—1946

JUNE

(Sydney), F.R.A.C.P., F.R.A.C.S.

Sydney
Australasian Medical Publishing Company Limited
1946

5/22/71

THE
MEDICAL JOURNAL
OF AUSTRALIA

IN TWO VOLUMES ANNUALLY

Volume I—1946

JANUARY TO JUNE

EDITOR:

MERVYN ARCHDALL, M.D., Ch.M. (Sydney), F.R.A.C.P., F.R.A.C.S.

SYDNEY
AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED
1946

KEY TO DATES AND PAGE NUMBERS.

Number.	Date.	Pages.
1	January 5	1 to 32
2	January 12	33 to 64
3	January 19	65 to 96
4	January 26	97 to 132
5	February 2	133 to 168
6	February 9	169 to 204
7	February 16	205 to 240
8	February 23	241 to 276
9	March 2	277 to 312
10	March 9	313 to 348
11	March 16	349 to 384
12	March 23	385 to 420
13	March 30	421 to 456
14	April 6	457 to 492
15	April 13	493 to 536
16	April 20	537 to 572
17	April 27	573 to 608
18	May 4	609 to 644
19	May 11	645 to 680
20	May 18	681 to 716
21	May 25	717 to 752
22	June 1	753 to 788
23	June 8	789 to 824
24	June 15	825 to 860
25	June 22	861 to 896
26	June 29	897 to 932

INDEX TO VOLUME I, 1946.

JANUARY TO JUNE

In this index (C.C.) indicates current comment; (O) indicates an original article; (R) indicates a report of case; (rev.), a review.

Page

A

Abbie, A. A.—Anatomy in the Medical Curriculum (O) 152
Abdomen, Gunshot Wounds of the, Early Results in a Short Series of Cases of, by T. F. Rose, A. Newson and D. Watson (O) .. 180
Abnormalities, Congenital, in Infants following Infectious Diseases during Pregnancy, with Special Reference to Rubella: A Third Series of Cases, by C. Swan and A. L. Tostevin (O) 645
Aborigines in the Northern Territory, A Sociological Study of the, and their Eye Diseases, by M. Schneider (O) 99
Abortion, Childbirth and, Infections due to Streptococcus Hæmolyticus Group A following, Stained Smears for the Rapid Diagnosis of, by H. M. Butler (O) 437
Abscess, Putrid Lung, by C. J. Officer Brown (O) 107

Abstracts from Medical Literature—
Authors—
Abrahamsen, D. 343
Adams, M. L., Frobisher and Kuhns 780
Allan, J. H. 522
Allen, A. C., and Spitz 484
Altwie-Werber, E., Loewe and Rosenblatt 161
Anderson, W. A. D., Pinkerton and Smiley 88
Appleton, A. B. 889
Armstrong, C. D., Bloomfield and Kirby 376
Atkinson, J. D., and Wilson .. 376
Atkinson, W. B., and Elftman .. 89
Aynsley, T. R. 305
Babudieri, B., and Bietti 304
Bacsich, P., and Wyburn 485
Bagby, J. W. 812
Baker, R. D. 888
Banerjee, S. 121
Banner, E. A., and Dockerty 634, 888
Barach, A. L., *et alii* 342
Barbara, D. A. 343
Beikenstein, N., and Gold 343
Bennett, A. E. 343
Bietti, G. B. 304
Bigelow, R. R., Bruschwig and Ricketts 194
Bishop, G. H. 485
Blain, A. W., and De Matteis .. 596
Blair, H. A., and Wedd 924
Blair, J. E., and Buchman 597
Blank, I. H., Lane, Rockwood and Sawyer 812
Bloch, K., and Rittenberg .. 121, 925
Blomfield, L. B., and Clark 89
Bloomfield, A. L., Armstrong and Kirby 376
Blum, G., and Wakeley 342
Bodian, D., and Howe 781
Bogen, E., and Margraves 413
Boisvert, P., Rantz and Spink .. 252
Borak, J., and Taylor 449
Blumgart, H. L. 161
Boyd, R. W. 377
Bridgman, C. S., and Smith .. 889
Britton, S. W., and Kline 924
Brown, J. B., and Orians 925
Brown, P. N., Salk, Pearson, Smyth and Francis 781
Bruschwig, A., Ricketts and Bigelow 194
Buchman, J., and Blair 597
Bugbee, H. G. 25
Burke, G., and Canter 161
Burrows, A., Russell and May .. 24
Buschke, F., and Cantril 449
Camiel, M. R. 852
Camp, J. D., and Moreton 57

Abstracts from Medical Literature—*Continued.*
Authors—*Continued.*
Candel, S., and Wheelock 556
Canter, M. M., and Burke 161
Cantril, S. T., and Buschke 449
Caro, M. R., and Stubenrauch .. 412
Castillo, J. C., and Stiff 523
Clark, W. E. Le Gros, and Blomfield 89
Clarkson, J., and Lederman 853
Clayton, S. G. 232
Cleveland, D., and Kindwall 343
Cohen, H. M., and Pfaff 412
Collom, S. A., and Ewing 596
Comfort, M. W., and Kelsey .. 88
Corber, A. A. 233
Costello, M. J., and Landy 24
Counceller, V. S., and Pratt .. 25
Couper, E. C. Ross 672
Crimm, P. D., and Westra 556
Curtis, A. C., Teitelbaum and Goldhamer 88
Custer, M. D., and Waugh 597
Cutting, W. C., and Dobson 744
Daland, E. M. 597
Daly, D. 745
Davalos, A. 813
Davies, D. V. 485
Davies, J. A. V., and Hutchings 672
Davison, C., and Demuth 889
Dawson, A. B. 89
De Matteis, A., and Blain 596
Demuth, E. L., and Davison 889
Denny, E. R., Shallenberger and Pyle 744
Detwiler, S. R. 889
Dick, T. B. S. 745
DiLeone, R., and Waterman .. 449
Dixon, G. J., and Dick 745
Dobes, W. L., Franke and Romano 812
Dobson, L., and Cutting 744
Dockerty, B., and Banner 888
Dockerty, M. B.—
And Banner 634
Hodgson and Mussey 634
Ducharme, P. 448
Dudley, M. G., and Walton 781
Dyer, H. F. 635
Eaton, R. M., *et alii* 597
Edlin, J. V., Johnson, Hletko and Heilbrunn 744
Eggers, S. W. N. 673
Eichwald, M., and Singletary .. 852
Elbel, E. R., and Green 924
Elftman, H., and Atkinson 89
Eller, G. H., and Frobisher 780
Elliott, H. W., and Norris 120
Elliott, S. D. 376
Emmel, V. M. 89
Enders, J. F. 780
Epstein, B. S. 448
Erickson, L., Taylor, Henschel and Keys 522
Ewing, W. M. D., and Collom .. 596
Falk, A., and Nicholson 557
Farmer, C. J., Hagens and Karp 305
Feinberg, S. M., and Friedlaender 744
Feldman, W. H., Hinshaw and Pfuetze 556
Field, J. B., *et alii* 523
Fields, H. 233
Fitzpatrick, F. K. 780
Flippin, H. F.—
Reinhold and Phillips 342
Zintel, Nichols, Wiley and Rhoades 744
Florey, M. E., McFarlan and Mann 304
Forbes, W. H., Sargent and Roughton 120
Francis, T., junior, Salk, Pearson, Brown and Smyth 781
Franke, A. G., Dobes and Romano 812

Abstracts from Medical Literature—*Continued.*
Authors—*Continued.*
Freed, S. C. 160
Freeman, W., and Watts 343
Friedlaender, S., and Feinberg .. 744
Friedman, A. P., and Merritt .. 342
Friedman, N. B. 484
Frobisher, M., junior—
Adams and Kuhns 780
And Eller 780
Frost, K., and Obermayer 412
Galindo, P., Hammon and Reeves 781
Gardner, J., *et alii* 925
Gates, O., and Warren 888
Gericke, O. L. 744
Gibson, D. M. 377
Gillan, R. U. 304
Gold, L., and Beikenstein 343
Goldberg, L. C. 812
Golden, R., and Ducharme 448
Goldhamer, S. M., Teitelbaum and Curtis 88
Goldstein, J. 709
Goodall, J. R. 233
Goodof, I. I. 88
Gordon, H. H. 812
Gorro, A. P. 813
Gortner, W. A. 121
Goyanna, R., and Greene 813
Graham, M. P., and Small 597
Gralnick, A. 745
Gratzek, F. R., and Stenstrom .. 57
Gray, D. J. 89
Green, E. L., and Elbel 924
Green, M. J., and Hamburger 376, 780
Greene, L. F. 413
And Goyanna 813
Groat, R. A., Rambach, junior, and Windle 596
Grolnick, M., and Loewe 376
Hagens, E. W., Karp and Farmer 305
Hale, C. H., and Robbins .. 56, 448
Hall, A. 708
Hall, I. Simpson 709
Halperin, M. H., McFarland and Niven 522
Hamburger, M., junior—
Hamburger and Green .. 376, 780
Puck and Robertson 377
Puck, Robertson and Hurst . 377
Hamburger, V. C. 376
Hammon, W. McD., Reeves and Galindo 781
Hansson, C. J. 57
Hauser, I. J., and Work 305
Heilbrunn, C., Edlin, Johnson and Hletko 744
Helwig, F. C., and Read 160
Hemphill, J. E., and Reeves .. 57
Henderson, J. 412
Hendry, A. M. 253
Henschel, A., Taylor, Erickson and Keys 522
Herrin, R. C., and Meek 522
Herzog, E. G. 253
Hilding, A. C. 708
Hinshaw, H. C., Feldman and Pfuetze 556
Hirshfeld, J. W. 195
Hletko, P., Edlin, Johnson and Heilbrunn 744
Hodgson, J. E., Dockerty and Mussey 634
Hogan, G. F. 557
Hone, E. L., *et alii* 925
Horn, R. C., Pendergrass and Lafferty 56
Howe, H. A., and Bodian 781
Howell, T. H. 557
Hurst, V., Puck, Hamburger and Robertson 377
Hutchings, G., and Davies 672
Hutter, A. M., and Parkes 233
Jackman, J., and Lubert 56
Jaffe, H. L. 852

Page

Abstracts from Medical Literature—*Continued.*
Authors—*Continued.*
- Johnson, B. C., *et alii* 523
- Johnson, H. K., and Larsener 343
- Johnson, H. W. 635
- Johnson, R. H., Edlin, Hletko and Heilbrunn 744
- Kaplan, E. B. 889
- Karp, M., Hagens and Farmer 305
- Kay, G. A., and Williams 120
- Keeper, C. S. 342
- Keitzer, W. A., Nesbit and Lynn 813
- Kelsey, M. P., and Comfort 88
- Kennedy, C., and Palmer 121
- Kerr, W. J., and Ralston 924
- Keys, A., Taylor, Erickson and Henschel 522
- Kickham, C. J. E. 413
- Kindwall, J. A., and Cleveland 343
- Kirby, W. M., Bloomfield and Armstrong 376
- Klein, B. V., and Stettin 523
- Kline, R. F., and Britton 924
- Krieg, E. G. 634
- Kuhns, W. J., Frobisher and Adams 780
- Kunstler, W. E. 557
- Kuyper, A. C. 523
- Laestar, C. H., and Phemister 194
- Lafferty, J. O., Pendergrass and Horn 56
- Lam, C. R. 57
- Landy, S., and Costello 24
- Lane, C. G., Rockwood, Sawyer and Blank 812
- Larsener, R., and Johnson 343
- Lederman, M., and Clarkson 853
- Lehr, D. 813
- Leslie, A., and Silverman 744
- Leuceutia, T. 853
- Levinson, S. O., Milzer and Lewin 781
- Lewin, P., Levinson and Milzer 781
- Lewis, B. O., and Sodeman 744
- Light, R. U., and Prentice 596
- Limarzi, L. R., and Wolff 233
- Loewe, L.—
  - Altwie-Werber and Rosenblatt 161
  - And Grolnick 376
- Lubert, M., and Jackman 56
- Lucic, H. 708
- Luecke, R. W., and Pearson 121
- Lynn, J. M., Nesbit and Keitzer 813
- MacFarland, M. L., and McHenry 523
- Maegraith, B. G., *et alii* 557
- Magoun, H. W., and Wilson 889
- Mandeville, F. B., and Nelson 25
- Mann, I., Florey and McFarlan 304
- Manter, J. T. 889
- Margraves, R. D., and Bogen 413
- Marks, M. B. 252
- Maroun, T., and Monnerot-Dumaine 484
- Martin, H., and Reese 304
- Martinez, D., and Visscher 522
- Massie, F. M. 194
- Mathé, C. P. 25
- May, H. B., Burrows and Russell 24
- McAdam, I. W. J. 597
- McCarty, M. 376
- McClosky, W. T., and Smith 377
- McCulloch, C. 708
- McCutchan, G. R. 160
- McDonald, J. R., Moersch and Tinney 888
- McFarlan, A. M., Florey and Mann 304
- McFarland, R. A., Halperin and Niven 522
- McHenry, E. W., and MacFarland 523
- McLoughlin, C. J., and Paulin 342
- McShan, W. H., *et alii* 925
- Meek, W. J., and Herrin 522
- Meekison, D. M. 673
- Merritt, H. H., and Friedman 342
- Mills, C. A., *et alii* 925
- Milzer, A., Levinson and Lewin 781
- Mitchell, H. H., *et alii* 121
- Moersch, F. P., and Stark 745
- Moersch, H. J., Tinney and McDonald 888
- Moeys, E. J., and Tordoir 673
- Mohanty, J. K. 161
- Monnerot-Dumaine, M., and Maroun 484
- Moore, T. 813
- Morehead, R. P., and Woodruff 888
- Moreton, R. D., and Camp 57
- Morrison, L. M. 556
- Morton, D. G., and Newgard 232
- Morton, J. 195
- Munger, A. 852
- Murphy, R. J., Romansky and Rittmann 160
- Murray, N. A. 88
- Mussey, R. D., Hodgson and Dockerty 634
- Nelson, C. M., and Mandeville 25
- Nesbit, R. M., Keitzer and Lynn 813
- Newgard, K., and Morton 232
- Nichols, A. C., Zintel, Flippin, Wiley and Rhoades 744
- Nicholson, C. 889
- Nicholson, J. H., and Falk 557
- Niven, J. I., McFarland and Halperin 522
- Norris, E. R., and Elliott 120
- Novak, E., and Stevenson 484
- Noyes, R. W. 634
- Obermayer, M. E., and Frost 412
- Olsen, A. M., and Tinney 557
- Ordstrand, V., Thomas and Tomlinson 557
- Orians, B. M., and Brown 925
- Osten, J. M., *et alii* 925
- Ostow, M. 745
- Overholt, R. H. 161
- Page, I. H., and Taylor 161
- Palmer, L., and Kennedy 121
- Parkes, J., and Hutter 233
- Paterson, M. T. 745
- Paul, H. E., *et alii* 121
- Paulin, J. E., and McLoughlin 342
- Peacher, W. G. 744
- Pearson, H. E., Salk, Brown, Smyth and Francis 781
- Pearson, P. B., and Luecke 121
- Pendergrass, E. P., Lafferty and Horn 56
- Pendergrass, R. C. 56
- Perkins, J. F., junior 924
- Perry, C. B. 557
- Peterkin, C. A. Grant 24
- Peterson, L. W. 195
- Pfaff, R. O., and Cohen 412
- Pfahler, G. E. 853
- Pfuetze, K. H., Hinshaw and Feldman 556
- Phemister, D. B., and Laestar 194
- Phillips, F., Reinhold and Flippin 342
- Pick, J. F. 195
- Pinkerton, H., Smiley and Anderson 88
- Poth, E. J. 194
- Potter, E. L. 635
- Pratt, J. H., and Counceller 25
- Prentice, H. R., and Light 596
- Proom, H. 376
- Puck, T. T.—
  - Hamburger and Robertson 377
  - And Hurst 377
- Pugh, D. G. 56
- Pyle, H. D., Shallenberger and Denny 744
- Ralston, H. J., and Kerr 924
- Rambach, W. A., junior, Groat and Windle 596
- Ransohoff, N. S. 342
- Rantz, L. A., Spink and Boisvert 252
- Read, J. T., and Helwig 160
- Reese, A. B., and Martin 304
- Reese, E. C. 194
- Reeves, R. J., and Hemphill 57
- Reeves, W. C., Hammon and Galindo 781
- Reinhold, J. G., Phillips and Flippin 342
- Resenberg, R. 343
- Resnick, L. 233
- Revens, W. S. 160
- Rhoades, J. E., Zintel, Flippin, Nichols and Wiley 744
- Rhoden, A. E. 484
- Rice, E. E., *et alii* 121
- Ricketts, J. T., Bruschwig and Bigelow 194
- Rittenberg, D., and Bloch 121, 925
- Rittmann, G. E., Romansky and Murphy 160
- Robbins, L. L., and Hale 56, 448
- Robertson, O. H., Hamburger and Puck 377
- Robinson, S. S., and Tasker 812
- Rockwood, E. M., Lane, Sawyer and Blank 812
- Rogers, H. M. 88
- Romano, D., Franke and Dobes 812
- Romansky, M. J., Murphy and Rittmann 160
- Rosenblatt, R., Loewe and Altwie-Werber 161
- Rosenwasser, H. 305
- Ross, S. G. 252
- Rothbard, S. 376
- Roughton, F. J. W., Forbes and Sargent 120
- Ruben, J. A., and Tipson 925
- Russell, B., Burrows and May 24
- Russell, W. O., Stowell and Sachs 888
- Sachs, E., Stowell and Russell 888
- Salk, J. E., Pearson, Brown, Smith and Francis 781
- Sarett, H. P. 523
- Sargent, F., Forbes and Roughton 120
- Sawyer, C. S., Lane, Rockwood and Blank 812
- Schachter, R. J. 120
- Scharrer, E. 89
- Senturia, B. H. 709
- Shallenberger, P. L., Denny and Pyle 744
- Shalom, E. S. 556
- Shorr, E. 413
- Silber, R. H. 523
- Silverman, D. N., and Leslie 744
- Simpson, S. A., and Young 485
- Singer, R. 709
- Singletary, W. V., and Eichwald 852
- Small, J. M., and Graham 597
- Smiley, W. L., Pinkerton and Anderson 88
- Smith, G. Harvey 232
- Smith, K. U., and Bridgman 889
- Smith, M. I., and McClosky 377
- Smyth, C. J., Salk, Pearson, Brown and Francis 781
- Snell, A. C. 304
- Snyder, J. C., and Wheeler 780
- Sodeman, W. A., and Lewis 744
- Spealman, C. R. 924
- Speed, J. S. 253
- Spink, W. W., Rantz and Boisvert 252
- Spitz, S., and Allen 484
- Stark, F. M., and Moersch 745
- Stenstrom, K. W., and Gratzek 57
- Stetten, D. 121
  - And Klein 523
- Steven, R. A. 161
- Stevenson, R. R., and Novak 484
- Stiff, H. A., and Castillo 523
- Stocker, F. W. 708
- Stowell, R. E., Sachs and Russell 888
- Stubenrauch, C. H., and Caro 412
- Sunderland, S. 89
- Tasker, S., and Robinson 812
- Taylor, H. K., and Borak 449
- Taylor, H. L., Erickson, Henschel and Keys 522
- Taylor, R. D., and Page 161
- Teitelbaum, M., Curtis and Goldhamer 88
- Tenennt, W. 448, 673
- Thomas, J. W., Ordstrand and Tomlinson 557
- Thorne, F. C. 745
- Tinney, W. S.—
  - And Olsen 557
  - Moersch and McDonald 888
- Tipson, R. S., and Ruben 925
- Tomlinson, C., Thomas and Ordstrand 557
- Tompkins, P. 634
- Tordoir, B. M., and Moeys 673
- Tuhy, J. E., and Welch 596
- Turnbull, J. A. 161
- Van Buskirk, C. 485
- Van Harreveld, A. 522
- Vastine, J. H. and M. F. 25
- Vaughan, W. W. 56
- Visscher, M. B., and Martinez 522
- Wagman, O. H. 708
- Wakeley, C. P. G., and Blum 342
- Walker-Taylor, P. N. 161
- Walls, E. W. 485
- Walton, C. H. A., and Dudley 781
- Warren, S., and Gates 888
- Waterman, G. W., and DiLeone 449
- Watts, J. W., and Freeman 343
- Waugh, J. M., and Custer 597
- Wedd, A. M., and Blair 924
- Weinstein, L., and Wesselhoeft 557
- Welch, C. S., and Tuhy 596
- Welch, P. B. 556
- Wesselhoeft, C., and Weinstein 557
- Westra, J. J., and Crimm 556
- Wheeler, C. M., and Snyder 780
- Wheelock, M. C., and Candel 556
- Wiener, A. S. 781
- Williams, R. H., and Kay 120
- Wiley, M. M., Zintel, Flippin, Nichols and Rhoades 744

Page

Abstracts from Medical Literature—*Continued.*
- Authors—*Continued.*
  - Wilson, A. K. 852
  - Wilson, G. S., and Atkinson 376
  - Wilson, W. C., and Magoun 889
  - Windle, W. F., Groat and Rambach 596
  - Wolf, A. V. 120
  - Wolff, J., and Limarzi 233
  - Woodruff, W. E., and Morehead 888
  - Woolley, D. W. 121
  - Work, W. P., and Hauser 305
  - Wyburn, G. M., and Baesich 485
  - Young, J. Z., and Simpson 485
  - Zachary, R. B. 596
  - Zintel, H. A., Flippin, Nichols, Wiley and Rhoades 744
- Bacteriology and Immunology 376, 780
  - Body Louse, Human, Experimental Infection of the, with Typhus Strains 780
  - Carriers, Dangerous, of Hæmolytic Streptococci 780
  - Diphtheria in Baltimore 780
  - Endocarditis, Bacterial—
    - And Penicillin 376
    - Subacute, Immunological Studies in 376
  - Mumps, Immunity in 780
  - Penicillinase 376
  - Pneumococcal Types, Transformation of 376
  - Rh Sensitization, Test for 781
  - Staphylococcus Aureus, Phage Typing of 376
  - Streptococci—
    - Group A, Bacteriostatic Effect of Human Serum on 376
    - Group A, Proteolytic Enzyme in 376
    - Hæmolytic, Dangerous Carriers of 376
  - Typhus, Rickettsial Agglutination in 780
- Biochemistry 121, 523, 925
  - Acetic Acid 121
  - Alloxan 121, 925
  - Anoxia 925
  - Biotin 121, 925
  - Body Composition 121
  - Bone Formation 523
  - Calcium Pantothenate 523
  - Choline 121
  - DDT 523
  - Endocrine Tissues 925
  - Fatty Acids 925
  - Fatty Liver 523
  - Folic Acid 523
  - Galactose 121
  - Glycogenesis 523
  - Hæmatopoiesis 925
  - Human Milk Fat 925
  - Lipides 121
  - Pantothenic Acid 523
  - Plasma Fibrinogen 523
  - Thiamin Requirements 925
  - Vitamin E 121
  - Vitamins in Muscle 121
  - Wound Healing 121
- Dermatology 24, 412, 812
  - Dermatitis Exfoliativa following Arsphenamine Therapy 24
  - Dermatoses of the Hands 812
  - Hæmangioendothelioma of the Skin 412
  - Ichthyosis, Treatment of 812
  - Lupus Erythematosus 812
  - Penicillin—
    - Allergic Reactions during the Administration of 412
    - In Dermatological Therapy 412
    - In the Treatment of Cutaneous Disease 812
  - Skin, Colloid Degeneration of the 812
  - Sulphonamides, Skin Eruptions due to the Application of 24
  - Sycosis Barbæ, The Treatment of, with Penicillin Cream 24
  - Tropical Disease, A, Resembling Lichen Planus 812
  - Vitamin Therapy in Dermatology 412
- Gynæcology 232, 634
  - Chorionepithelioma, Extragenital 233
  - Extrophy of the Bladder with Procidentia 232
  - Fallopian Tube, Surgical Obstruction of the 634
  - Granulosa-Cell Tumour of the Ovary 634
  - Hæmorrhage, Vaginal, in Women Aged Over Forty Years 634

Page

Abstracts from Medical Literature—*Continued.*
- Gynæcology—*Continued.*
  - Ovulation, Basal Body Temperature Graphs as an Index to 634
  - Theca-Cell Tumours of the Ovary 634
  - Tuberculosis and Cancer of the Uterus, Coexisting 232
  - Uterine Polypi 232
- Hygiene 377, 781
  - Encephalitis, An Epidemiological Study of 781
  - Fungous Spores, Air-Borne, in Manitoba 781
  - Influenza Vaccination, Effect of, One Year Later 781
  - Poliomyelitis—
    - Experimental, Effect of Fatigue, Chilling and Mechanical Trauma on Resistance to 781
    - Transmission of, The, to Rhesus Monkeys by Accidental Laboratory Infection 781
  - Streptomycin and "Promin" in Experimental Tuberculosis 377
  - Triethylene Glycol Vapour in Hospital Wards 377
  - Tuberculosis, Prevention of 377
  - X-Ray Survey, An, of Healthy Troops in Canada 377
- Medicine 160, 556
  - Allergy, Respiratory, and Unresolved Pneumonia 161
  - Arterial Thickening 557
  - Bronchiectasis 557
  - Feeding Reflex, Gastric, Disturbances of the 556
  - Gonorrhœa, The Treatment of, with Penicillin in Oil 160
  - Hæmorrhage, Impending Cerebral 161
  - Hypertension, Malignant, Cured by Nephrectomy 557
  - Meningitis, Purulent, Hypertonic Solutions in the Treatment of 556
  - Mononucleosis, Infectious 160
  - Myocardial Infarction, Acute, The Relation of Effort to Attacks of 161
  - Myocarditis, Acute 556
  - Night Cramps 557
  - Oleothorax in the Treatment of Tuberculous Empyema 556
  - Paracentesis of the Chest 557
  - Penicillin, The Rectal Administration of 161
  - Peptic Ulcer 556
  - Pleural Effusion 557
  - Pneumonia, Non-Tuberculous, Complicating Tuberculosis 557
  - Premenstrual Distress, The Treatment of, and the Androgens 160
  - Pruritus Ani 160
  - Scarlet Fever 557
  - Simmond's Disease, The Treatment of, with Male Sex Hormones 161
  - Sprue, Carbohydrate Absorption in 557
  - Thiouracil Therapy in Thyreotoxicosis 160
  - Tuberculosis 556
    - Pulmonary, Lobectomy and Pneumonectomy for 161
  - Ulcer—
    - Peptic, Ætiology of 161
    - Tropical 161
  - Whooping Cough, Maternal Blood in 161
- Morphology 89, 485, 889
  - Anastomoses, Arterial, Efficiency of Intramuscular 89
  - Argentaffin Cells of the Stomach 89
  - Blood Vessels of Nervous Tissue 89
  - Carrying Angle of Human Arm 89
  - Cells, Absorbing, of the Small Intestine 89
  - Corpus Callosum, Perception and the 889
  - Extensor Digitorum Communis, Insertions of 889
  - Hamstring Muscles, Anomalous 89
  - Heart, Human, Conducting System in 485
  - Light, Mechanical Responses of Retina to 889
  - Lungs, Arteries and Veins of the 889
  - Meningeal Relations of Hypophysis 89
  - Muscles, Interosseous, of the Human Foot 889

Page

Abstracts from Medical Literature—*Continued.*
- Morphology—*Continued.*
  - Nerve Regeneration, The Effect of Interference with Blood Supply on 485
  - Nerve, The Seventh Cranial (Facial) 485
  - Nerves, Visceral and Somatic, Regeneration of 485
  - Olivary Nucleus, The Inferior 889
  - Pelvic Brim, Female, Two Main Diameters of 889
  - Skin, Regeneration of 485
  - Sleep Centres in the Cortex 889
  - Synovial Fluid, The Cell Content of 485
- Neurology and Psychiatry 342, 744
  - Alcoholic Personality, Neurotic Character Structure of the 343
  - Alcoholism, Chronic, The Conditioned Aversion Treatment in 744
  - Criminal Behaviour, Psychodynamics in 343
  - Cup, Physiological, of the Optic Disk, The Depth of the, and Mental Ability 745
  - Delirium Tremens, Psychogenesis in 343
  - Electroshock Treatment, A Fatality Incident to 745
  - Headache following Injuries to the Head 342
  - Lobotomy, Prefrontal 343
  - Lupus Erythematosus, Acute Disseminate, Central Nervous System in 745
  - Organic Deterioration 343
  - Radiculitis, Acute Brachial 745
  - Sclerosis, Primary Lateral 745
  - Senile and Arteriosclerotic Mental Patient, Problems of the 343
  - "Shock" Therapies, An Evaluation of the 343
  - Speech Disorders in the Second World War 744
  - Torticollis, Spasmodic 745
  - "Tridione", The Anticonvulsant Action of 745
- Obstetrics 233, 635
  - Anæmia in Pregnancy 233
  - Infection, Uterine Defence Mechanism against 233
  - Penicillin, The Transmission of, through the Placenta 233
  - Placenta Prævia, The Conservative Management of 635
  - "Prostigmin" as a Test for Early Pregnancy 233
  - Stilbœstrol, The Influence of, on Lactation 233
  - Toxæmia of Pregnancy, Late 635
  - Vitamin K Administered during Labour, The Effect on Infant Mortality of 635
- Ophthalmology 304, 708
  - Blepharitis, Marginal 304
  - Blinking 708
  - Cataract Incisions, Closure of 708
  - Corneal Ulcers, Insulin Treatment of 305
  - Disciform Degeneration of the Macula 708
  - Eclipse Blindness 708
  - Glaucoma, Diathermy for 708
  - Hypotropia 708
  - Injuries, Perforating 304
  - Lysozyme 304
  - Retinoblastoma, Bilateral 304
  - Strabismus Treated Orthoptically 304
- Orthopædic Surgery 253, 673
  - Air Arthrography in the Diagnosis of Torn Semilunar Cartilage 253
  - Colles Fractures, Treatment of Malunited 253
  - Dislocation, Chronic, of the Base of the Metacarpal of the Thumb 673
  - Fractures—
    - Kuntscher Method, The, of Treatment of 673
    - Of Long Bones, The Treatment of Non-Union or Delayed Union of 673
  - Osteoarthritis as an Orthopædic Problem 253
  - Plasmocytoma of Bone 673

Page

Abstracts from Medical Literature—*Continued.*

Oto-Rhino-Laryngology 305, 709
Acetylsalicylic Acid: A Probable Cause for Secondary Post-Tonsillectomy Hæmorrhage .. 709
Aircraft Noise, Effect of, on Hearing 709
Fenestration of the Labyrinth .. 709
Otitis, External, Treatment of . 709
Penicillin Therapy by Inhalation 305
Sinusitis and Penicillin 305
Thrombophlebitis, Lateral Sinus 305

Pædiatrics 252, 672
Neo-Natal Life, Some Problems of 252
Penicillin in Infections of Infancy 672
Penicillin Treatment—
Of Oral Inflammations in Childhood 252
Of Pneumococcus Meningitis in Infants 672
Rheumatic Fever, The Treatment of, with Penicillin 252

Pathology 88, 484, 888
Adenoma of the Bronchus 888
Burns, Internal Lesions in 888
Carcinoma of the Uterus, The Vaginal Smear in Diagnosis of 888
Chorionepithelioma, Primary Intracranial, with Metastases to the Lungs 888
Endarteritis, Subacute Bacterial (Streptococcus Viridans) Pulmonary 484
Glomerulosclerosis, Intercapillary 88
Liver Function Tests, The Comparative Value of Several 88
Lymphoma, Solitary Giant Follicular, of the Vermiform Appendix 888
Myasthenia Gravis, Tumours of the Thymus in 88
Neutropenia, Primary Splenic .. 88
Occlusion of the Hepatic Veins 88
Paraganglioma, Malignant 484
Pneumonia, Giant-Cell, with Inclusions 88
Scrub Typhus (Tsutsugamushi Disease) and Other Rickettsial Diseases, A Comparative Study of the Pathology of .. 484
Sweat Gland Tumours of the Vulva 484
Theca-Cell Tumours of the Ovary 888
Trench Foot, The Pathology of . 484

Physical Therapy 57, 449, 853
Anæsthesia, Refrigeration 57
Carcinoma—
Cervical, Treated by Interstitial Radium Implantation 449
Mammary, Survival after X-Ray Therapy of 57
Of the Œsophagus, Radium Treatment of 853
Hæmangioma, The Treatment of 853
Marie-Strümpell Disease, Röntgen Irradiation in the Treatment of 57
Röntgen Therapy of Bladder Carcinomata 449
Sarcoma, Kaposi's 57
Ureteral Obstruction, The Question of, by Irradiation 853
X-Ray Therapy in Advanced Rheumatoid Arthritis 449

Physiology 120, 522, 924
Anoxia, Age, Sex, Carbohydrate, Adrenal Cortex and Other Factors in 924
Arsenic Trioxide, Tolerance to, in the Albino Rat 120
Arsenite, The Effect of, on the Respiration of Rat Tissues .. 120
Blood Flow in Hands, Effect of Ambient Air Temperature and of Hand Temperature on 924
Blood Volume of Normal Young Men, The Effect of Bed Rest on the 522
Calcification, Traumatic: A Precipitating Factor in "Bends" Pain 522
Carbon Monoxide Uptake, The Rate of, by Man 120
Cholinesterase, Use of, in Shock 120
Dehydrating Effect, The, of Continuously Administered Water 120
Muscle Fibres, Degenerated, Reinnervation of, by Adjacent Functioning Motor Units 522

Page

Abstracts from Medical Literature—*Continued.*

Physiology—*Continued.*
Nerves, Afferent, Excited by Intestinal Distension 522
Pulse Reaction to Step-Up Exercise on Benches of Different Heights 924
Shivering, Role of Proprioceptors in 924
Skin Temperature Responses to Local Heating, Observations on 522
Thiourea, Absorption, Distribution and Excretion of 120
Vascular Responses of the Nasal Mucosa to Thermal Stimuli .. 924
Venous Return, The Action of Cardiac Ejection on 924
Visual Thresholds as an Index of the Modification of Anoxia by Glucose 522

Radiology 56, 448, 852
Amœbiasis, The Clinical Significance of Deformity of the Caecum in 448
Calcification in the Ascending Aorta 56
Carcinoma of the Prostate, Treatment of, by Irradiation . 852
Collapse of the Lung, Lobar and Segmental 56
Radiographic Appearance of 448
Fistula, Arterio-Venous, Cardiac Changes in 56
Gastritis, Antral, Radiological and Gastroscopic Findings in 56
Gaucher's Disease, The Early Radiological Diagnosis of 448
Leontiasis Ossea, A Probable Explanation for: Fibrous Dysplasia of the Skull 56
Necrosis, Radiation, of the Calvarium 57
Œsophageal Displacement, Atypical, with Left Atrial Dilatation 448
Osteoma, Osteoid, of Bone 852
Pulmonary Infiltrations, Transient Successive (Löffler's Syndrome) 852
Röntgen Examination in Congenital Intestinal Obstructive Defects in Infants 852
Röntgenology of the Draining Bronchi from Tuberculous Cavities 852
Sarcoma and Chondrosarcoma, Osteogenic 56

Surgery 194, 596
Acrylic Resin for the Closure of Skull Defects 597
Burns—
Local Treatment of 194
Metabolic Changes, after, The 195
Cancer of the Breast 597
Concussion of the Spinal Cord .. 596
Dermoplasty of War Wounds of the Lower Part of the Leg .. 195
Gelatin Sponge and Thrombin .. 596
Goitre, Substernal and Intrathoracic 596
Heparin, The Use of, in the Abdomen 194
Œdema and Ecchymosis, Pulmonary, after Hæmorrhage .. 597
Pancreatitis, Acute 195
Penicillin—
In Acute Osteomyelitis 597
In the Treatment of Chronic Osteomyelitis 597
Penicillin Therapy in Fracture of the Femur 596
Removal, Total, of the Pancreas and Other Organs and Tissues 194
Segmental Resection, Primary, in the Left Side of the Colon .. 597
Shock, The Causation of 194
Succinylsulphathiazole and Phthalylsulphathiazole in Colon Surgery 194
Thenar Palsy 596
Wound Infection, Prophylaxis of 195
Wounds, Sucking, of the Chest 596

Therapeutics 342, 744
Actinomycosis 744
Amœbic Hepatitis 744
"Diodoquin" 744
Penicillin 342
Treatment, The, of Subacute Bacterial Endocarditis with 342

Page

Abstracts from Medical Literature—*Continued.*

Therapeutics—*Continued.*
Penicillin Aerosol, Inhalation of, by Patients with Bronchial Asthma, Chronic Bronchitis, Bronchiectasis and Lung Abscess 342
Poliomyelitis 342
Privine Hydrochloride 744
Streptomycin, A Study of 744
Suicide by Ingestion of Amphetamine Sulphate 744
Sulphadiazine 342
U.F.I. 342
Vincent's Angina 744

Urology 25, 413, 813
Aluminium Hydroxide Gels in Renal Calculus 413
Anuria 25
Spinal Analgesia in Treatment of 413
Nephrolithotomy for Recurrent Branching Calculi 25
Prostatic Adenomectomy, Perineal 813
Prostatic Resection, Transurethral 413
Pyuria, Abacterial, True Infective 813
Renal Pelvis and Ureter, Duplication of 813
Subcutaneous Urography 25
Sulphacetamide in Urinary Tract Infections 813
Testicle, Rupture of the 25
Tuberculosis, Renal, Prognosis of 813
Ureteric Obstruction in Children 413
Uretero-Intestinal Anastomosis, Bilateral 813
Wilms Tumour of the Kidney .. 25

Abt, A. F. 884
Abt, I. A. 884
Achalasia, Œsophageal 816
Adams, D. Monk—The Spelling of Words 345
Addison's Suprarenal Syndrome of Primary Pituitary Origin, A Case of, by W. R. Lang (R) 335
Address, An—
By A. V. Meehan (O) 133
By A. C. Thomas (O) 573
Changing Face, The, of Medical Practice in Tasmania, by G. M. W. Clemons (O) 609
Politics and the Medical Profession, by J. Dale (O) 65
Post-War Rehabilitation of Science, The, by J. G. Wagner (O) 97
Adenoids, Tonsils and, A Method for the Removal of, under Local Anæsthesia with the Patient in the Recumbent Position, by R. H. Bettington (O) 882
Adrenal Hæmorrhage in Erythroblastosis 163
Advertisements for Permanent Positions 566
Afibrinogenæmia, Congenital (C.C.) 375
Agglutinin, The Anti-O, in Human Blood with the Report of a Case of its Occurrence, by N. R. Henry (O) 395
Aird, I. 303
Akhurst, T. A. F. 234
Albaugh, C. H. 23
Albrect 923
Allan, George, Death of 453
Allergy, Clinical, of the Upper Respiratory Tract, The Botany of Toowoomba and Environs and its Relation to, by C. R. Morton (O) 585
Amberson, J. Burns 920
American Journal of Obstetrics and Gynecology, The 411
Amœbiasis, Occult, in Ex-Prisoners of War, by C. E. M. Gunther .. 490
Amœbic Pericarditis (C.C.) 159
Amputation, Local, of Gangrenous Toes in the Presence of Glycosuria and Senility, by N. C. Joel (R) 298
Amsden, H. H. 669
Amyotonia Congenita (Oppenheim's Disease) 854
Anæmia 814
Aplastic 814
Hypoplastic 815
Anæsthesia—
Hypnosis as a Substitute for, Some Observations Concerning the Use of, by R. L. H. Sampimon and M. F. A. Woodruff (O) 393

Page

- Anæsthesia—*Continued.*
  - In Childbirth 198
  - Local, A Method for the Removal of Tonsils and Adenoids under, with the Patient in the Recumbent Position, by R. H. Bettington (O) 882
  - Spinal, and Chloroform: A Comparison of Mortality—
    - By C. E. Corlette (O) 545, 892
    - By S. V. Marshall 750
    - By J. E. Thomas 750
- Analgesia—
  - In Labour 197
  - Spinal—
    - By J. Oldham (O) 432
    - "Non-Take", by P. Gill 606
- Anastomosis, Intestinal, The Prevention of Leakage after (C.C.) 887
- Anatomy—
  - In the Medical Curriculum, by A. A. Abbie (O) 152
  - Introduction to the Study of, An: The Tissues of the Body, by W. E. Le Gros Clark (rev.) 479
- Anderson, A. J. 157
- Anderson, D.—The Placing of X-Ray Films in Envelopes 930
- Anderson, G. 638, 641, 712
  - North and Wilson—
    - Resistance, The. of Hæmophilus Influenzæ to the Action of Penicillin, with Special Reference to Type B Strains (O) 626
    - Treatment, The, of Hæmophilus Influenzæ Meningitis with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum (O) 215
- Anderson, George Murray, Death of 608, 786
- Anderson, G. W., *et alii* (Global Epidemiology: A Geography of Disease and Sanitation) (rev.) 591
- Anderson, J. Ringland 675
- Anderson, P. M.—A Note on the Use of Penicillin in the Laboratory Diagnosis of Whooping-Cough (O) 244
- Anderson, S. G.—A Note on Two Laboratory Infections with the Virus of Newcastle Disease of Fowls (R) 371
- Aneurysm, Traumatic Arterio-Venous, of the Femoral Blood Vessels, by G. C. V. Thompson (O) 104
- Angina—
  - Ludwig's, A Case of, by V. Bulteau (R) 514
  - Pectoris (C.C.) 632
- Anniversary, A Twenty-Fifth (C.C.) 411
- Anorexia Nervosa 310
- Anoxia, Renal Failure and, by J. Walker Tomb 63
- Anti-Cancer Council of Victoria, The 571
- Anus, Imperforate 129
- Appendicectomy, A Jungle, by N. M. Kater (R) 443
- Arachnoiditis, Basal 928
- Araneidism (C.C.) 811
- Archer, V. W. (The Osseous System: A Handbook of Roentgen Diagnosis) (rev.) 666
- Arden, F.—Rupture of the Liver in the New-Born: Recovery after Blood Transfusion and Laparotomy (R) 187
- Armstrong, W. D. 86
- Armytage, J. E., and Rountree—Hospital Blankets as a Source of Infection (O) 503
- Arteriosclerosis, Hypertensive, with Retinal Changes 378
- Arthritis—
  - Acute Suppurative, of the Hip 162
  - Rheumatoid, Muscular Lesions in (C.C.) 670
- Artificial Respiration Explained, by F. C. Eve (note) 516
- Ascorbic Acid in the Milk of Melbourne Women, by D. Winikoff (O) 205
- Aseptic Technique, Points in 201
- Ashby, E. 249
- Aspinall, Andrew Eric and Archibald John, Deaths of 238
- *Association professionelle internationale des médecins* 633
- "Atebrin" and Dermatitis: An Inquiry—
  - By "Inquirer" 607
  - By N. Paul 715
- Atelectasis, Congenital 854

Page

- Atkinson, N.—Preliminary Report on Strains of Salmonella Blegdam Causing Infections in Humans in New Guinea (O) 326
- Atomic Energy in the Coming Era, by D. Dietz (rev.) 629
- Atlas of Surgical Approaches to Bones and Joints, by T. Nicola (rev.) 808
- Aub, J. C. 707
- Australasian Medical Publishing Company, Limited 127, 558, 600
- Australia and Science: The University of Sydney and Scientists—
  - By A. J. Canny 381
  - By N. E. Goldsworthy 346
  - By D. R. Moore 418
  - By F. W. Simpson 417
  - (Leading Article) 249
- Australian and New Zealand Association for the Advancement of Science 823
- Australian Army Medical Corps, Rates of Pay for Part-Time Duties in the 569
- Australian Broadcasting Commission 552
- Australian Medical Board Proceedings—
  - New South Wales 31, 64, 454, 490, 644, 820
  - Queensland 64, 276, 384, 455, 491, 679, 819
  - Tasmania 455, 491, 895
- Australian Pharmaceutical Formulary 567
- Aviation Neuro-Psychiatry, by R. N. Ironside and I. R. C. Batchelor (rev.) 480

B

- Bacille Calmette Guérin, by J. A. R. Murphy 930
- Bacillus Proteus OXK, The Use of a Polysaccharide of, in the Diagnosis of Scrub Typhus, by P. de Burgh (O) 81
- Backache—
  - In Soldiers, by D. Stuckey (O) 838
  - Low—
    - By A. E. Lee (O) 42
    - By E. Murphy (O) 44
- Back Pain, Low, by A. V. Meehan (O) 40
- Bacteria in Relation to the Milk Supply: A Practical Guide for the Commercial Bacteriologist, by C. H. Chalmers (rev.) 479
- Bacterial Cell, The: In Its Relation to Problems of Virulence, Immunity and Chemotherapy, by R. J. Dubos, with an addendum by C. F. Robinow (rev.) 515
- Bailey. H. (Demonstrations of Operative Surgery for Nurses) (rev.) 516
- Ball, L.—Volkmann's Ischæmic Contracture of the Forearm (R) 224
- Bancroft, Joseph, Memorial Lecture 127
- Banks-Smith, R. G. 674
- Barach, A. L. 193
- Barber, A.—Politics and the Medical Profession 416
- Barbour. J. R.—Fractures of the Carpal Scaphoid (O) 352
- Basic Wage. The Shortage of Nurses and Social Medicine—
  - By M. C. DeGaris 785
  - By E. S. Meyers (O) 548
- Batchelor, I. R. C., and Ironside (Aviation Neuro-Psychiatry) (rev.) 480
- Battles, M. G. 595
- Bauer, L. H. 302
- Bayon, H. P. 340
- "Beach Foot", by E. Pockley 346
- Bearham, G. 200
- Begg, J. 60, 62, 130, 163, 855
- Bell, G. 230
- Bell, Hocking *versus* 254
- Bell, W. J., junior 445
- Benson, L.—Blood Loss in Cæsarean Section (O) 842
- Bergman 810
- Beriberi, Yaws and: A Warning, by C. M. Deland 676
- Berliner, F. 118
- Bettinger, H. F., and Jacobs—A Contribution to the Problem of Masculinization (O) 10
- Bettington, R. H.—
  - And Vincent—Report on a Series of Cases of Sinusitis Treated by Chemotherapy at an Australian General Hospital (O) 358

Page

- Bettington, R. H.—*Continued.*
  - Method, A, for the Removal of Tonsils and Adenoids under Local Anæsthesia with the Patient in the Recumbent Position (O) 882
- Bevan, Mr. A. 520, 742
- Beveridge, R. L. 118
- Beveridge, W. I. B., Campbell and Lind—Pleuropneumonia-Like Organisms in Cases of Non-Gonococcal Urethritis in Man and in Normal Female Genitalia (O) 179
- Bickart, D.—A Case of Intractable Constipation 166
- Bicknell, F., and Prescott (The Vitamins in Medicine) (rev.) 552
- Bierring, W. L. 740
- Bicuspid Aortic Valve 163
- Bishop Harman Prize, The Katherine 675
- Bishop, W. A. 54
- Black, D. A. K. 373
- Black, G. H. Barham 675
- Black, R. H. 234
- Blackburn, C. R. Bickerton 234
- Bladder, Urinary, Intraperitoneal Rupture of the 380
- Blanch, M. 27, 28
- Blankets, Hospital—
  - As a Source of Infection, by P. M. Rountree and J. E. Armytage (O) 503
  - Treatment of, The, with Oil Emulsions and the Bactericidal Action of "Fixanol C" (Cetyl Pyridinium Bromide), by P. M. Rountree (O) 539
- Blashki, E. P. 238
  - Legacy Club, The 63
- "Blast" Injury of the Spinal Cord, Report of a Fatal Case of, by D. Leslie (R) 188
- Blaubaum, P. E. 130
  - Congenital Fibrocystic Disease of the Pancreas (O) 833
- "Blood", A Journal Devoted to Hæmatology (C.C.) 743
- Blood Group Frequencies—
  - In Hollanders, by J. J. Graydon, R. T. Simmons and E. F. Woods (O) 576
  - In Papuans, Further Observations on the Rh and Hr Factors and the, by R. T. Simmons, J. J. Graydon and E. F. Woods (O) 537
- Blood Groups—
  - In Tasmania, by C. Duncan (O) 475
  - In the Maori, by J. J. Graydon and R. T. Simmons (O) 135
- Blood, Human, The Anti-O Agglutinin in, with the Report of a Case of its Occurrence, by N. R. Henry (O) 395
- Blood Loss—
  - In Cæsarean Section—
    - By L. Benson (O) 842
    - By K. H. Broome 930
  - Some Effects of, on Healthy Males, by R. J. Walsh and A. K. Sewell (O) 73
- Boas, E. P. 193
- Boileau-Grant, J. C., and Cates (A Handbook for Dissectors) (rev.) 704
- Bone as Human Food (C.C.) 595
- Bones and Joints, Atlas of Surgical Approaches to, by T. Nicola (rev.) 808
- Books Received 32, 64, 96, 168, 204, 240, 276, 312, 420, 456, 492, 536, 572, 608, 680, 716, 752, 787, 824, 860, 896, 932
- Botany, The, of Toowoomba and Environs and its Relation to Clinical Allergy of the Upper Respiratory Tract, by C. R. Morton (O) 585
- Bourne, A. W.—
  - And Williams (Recent Advances in Obstetrics and Gynæcology) (rev.) 299
  - (Synopsis of Obstetrics and Gynæcology) (rev.) 666
- Bourne, G. H. 921
- Bowden, K. M.—Spontaneous Rupture of the Spleen, with Notes on Two Cases (O) 506
- Bowel, Congenital Deformity of the 854
- Bowker, Cedric Victor, Death of 823
- Boys, C. V. 87
- Braddon. P. D.—Columnar-Celled Carcinoma of the Rectum Treated by Radon: Preliminary Report Sixteen Months after Treatment (R) 477

Page

- Brain Disease, Organic: Possibly Cerebral Tumour 309
- Brain, W. R., and Strauss (Recent Advances in Neurology and Neuropsychiatry) (rev.) 371
- Braithwaite, P.—Treatment of Gunshot Wounds of the Chest in the Field by Penicillin Therapy 418
- Bray, George William, Death of 489
- Britain, Great—
  - Future Health Services in 487
    - (C.C.) 482
  - National Health Service Bill of 524
    - By S. Siedlecky 893
    - (Leading Article) 517
  - Report, A, on a Comprehensive Dental Service from (Leading Article) 593
- British Medical Agency of New South Wales, Limited 602
- British Medical Agency of Queensland, Proprietary, Limited. Queensland Medical Finance, Proprietary, Limited 126
- British Medical Association—
  - Federal Council 126, 600
    - Advertisements for Permanent Positions 566
    - Appointment of Office Bearers 558
    - Australasian Medical Publishing Company, Limited 558
    - Australian Naval Medical Services 566
    - Australian Pharmaceutical Formulary 567
    - Brochure for Public Circulation 562
    - Commonwealth Employees' Compensation Act 565
    - Commonwealth Serum Laboratories, Products from the 565
    - Compulsory Health Insurance 562
    - Conditions of Service Committee 568
    - Constitution of the Federal Council and Autonomy of the Branches in Australia 559
    - Contract Practice 561
    - Control of Medical Practitioners of Recent Graduation 570
    - Date and Place of Next Meeting 570
    - Deafness, Post-Rubella 565
    - Decorations Received by Medical Officers of the Australian Armed Forces 558
    - Drugs, The Nomenclature of 567
    - Emergency Medical Service 569
    - Federal Common Form of Agreement 561
    - Federal Medical War Relief Fund 559
    - Federal Organization Fund 559
    - Fees for Medical Examinations 567
    - Fees for the Examination of Recruits to the Army 570
    - Finance 558
      - And the Western Australian Branch 560
    - High-Frequency Apparatus, Restrictions on 570
    - Hospital Services 563
    - MacCallum, Dr. F., Illness of 559
    - Medical Officers' Relief Fund (Federal) 558
    - Medical Planning 562
    - Medical Registration 561
    - Meeting of the Federal Council 553, 558
    - National Health and Medical Research Council 561
    - Notice . 27, 59, 162, 236, 273, 310, 344, 380, 414, 450, 486, 530, 570, 603, 636, 675, 710, 782, 816, 855, 927
    - Ophthalmic Practitioners, Shortage of 569
    - Opticians and Optometrists, The Teaching of, in any Branch of Ophthalmology 567
    - Organization of the Profession 559
    - Overseas Travelling Fellowships 558
    - Pharmaceutical Benefits Act, 1944 562
    - Post-Graduate Facilities in the United States 567
    - Principles—
      - Fundamental, of the Medical Profession 562
      - Of Medical Ethics 570
    - Professional Rooms for Civilian Medical Practitioners 569
    - Proprietary Medicines Investigation Committee 565
    - Publicity Committee 559
    - Quarantine Officers, Appointment of 564

British Medical Association—*Continued.*

  - Federal Council—*Continued.*
    - Rates of Pay for Part-Time Duties in the Australian Army Medical Corps 569
    - Reestablishment and Reemployment Act, 1945 566
    - Refugee Medical Practitioners from Europe 558
    - Rehabilitation of Medical Officers in the Armed Forces 568
    - Release of Medical Officers from the Services 570
    - Repatriation Commission 568
    - Representatives 558
    - Retirement, The—
      - Of Dr. T. A. Price and Dr. H. C. Colville 558
      - Of Surgeon Captain W. J. Carr and Air Vice-Marshal T. E. V. Hurley 558
      - Of the Chairman of the Medical Equipment Control Committee 570
    - Salaries of Commonwealth Medical Officers 564
    - Special Groups 559
    - Specialist, Definition of a 565
    - Telephone Directories 567
    - Unemployment and Sickness Benefits Act, 1944 565
    - Votes of Thanks 570
    - War Emergency Organization 568
  - Katherine Bishop Harman Prize 675
  - New South Wales Branch—
    - Books Added to the Library 855
    - British Medical Agency of New South Wales, Limited 602
    - Child Health, Chair of, at the University of Sydney 601
    - Amendment of By-Laws 600
    - Annual Meeting 598
      - Of Delegates 600
    - Annual Report of the Council 598
    - Australasian Medical Publishing Company, Limited 600
    - Chiropodists, Recognition of 601
    - Coal Inquiry 601
    - Congratulations 598
    - Constitution of Council 600
    - Contract Practice 601
    - Council 599
    - Election of Office-Bearers 603
    - Federal Council of the British Medical Association in Australia 600
    - Federal Council Organization Fund 600
    - Federal Medical War Relief Fund 600
    - Financial Statement 602
    - Hospital Policy 601
    - Incoming President's Address 603
    - Induction of President 603
    - Library 599
    - Local Associations of Members, Affiliated 599
    - Medical Benefits Fund of New South Wales 601
    - Medical Finance Limited 602
    - Medical Sociology and Research, Department of 601
    - Meetings 598
      - Scientific 26, 58, 306, 378, 814, 854, 926
    - Membership 598
    - Pathological Services, Comprehensive, for New South Wales 601
    - Pharmaceutical Benefits Act, 1944 601
    - Premises Revenue Account 602
    - Rehabilitation of Medical Officers of the Armed Forces 600
    - Representatives 598
    - Resident Medical Officers' Salaries 601
    - Roll of Honour 598
    - Sandes, Francis Percival 598
    - Special Groups for the Study of Special Branches of Medical Knowledge 600
    - X-Ray Services in North Coast Towns of New South Wales 601
  - Ophthalmological Society of Australia—
    - Annual Meeting 674
    - President's Address 674
  - Queensland Branch—
    - Affiliated Local Associations 126
    - Annual Meeting 122
    - Annual Report of Council 122
    - Australasian Medical Publishing Company, Limited 127

British Medical Association—*Continued.*

  - Queensland Branch—*Continued.*
    - Bancroft, Joseph, Memorial Lecture 127
    - British Medical Agency of Queensland, Proprietary, Limited. Queensland Medical Finance, Proprietary, Limited 126
    - British Medical Association (Queensland Branch) Memorial Fund 125
    - Building Subcommittee 125
    - Election—
      - Of Auditors 127
      - Of Office-Bearers 127
    - Ethics Committee 122, 127
    - Federal Council 126
    - Federal Medical War Relief Fund 123
    - Finance 127
    - Financial Statements 128
    - Hospital Matters 125
    - Induction of President 129
    - Jackson Lecture 127
    - Library 122
    - Licences under Alien Doctors (National Security) Regulations 124
    - Limbs, Artificial, Supply of 124
    - Linen for Doctors' Surgeries 123
    - Liquid Fuel Supplies 123
    - Lodges 125
    - Medical Fees Tribunal 125
    - Meetings—
      - Council 122
      - Scientific 122
    - Membership 122
    - Memorial Roll 127
    - Motor-Car Tires and Accessories 123
    - Newsletter, Monthly 123
    - Obituary 122
    - Office-Bearers and Councillors 122
    - Organization Subcommittee 124
    - Pharmaceutical Benefits Act, 1944 126
    - President's Address 129
    - Profession, The, and the Public 129
    - Queensland Medical Coordination Committee 123
    - Queensland Medical War Benefit Fund 123
    - Rationing 123
    - Rehabilitation of Members of the Armed Services 123
    - Repatriation Commission: Medical Benefits for Dependants of Deceased Soldiers 123
    - Representation 123
    - Roll of Honour 122
    - Social 127
    - University of Queensland 127
    - Votes of Thanks 129
    - War Emergency Organization 123
  - Representative Meeting in London, The Special 746
    - By H. Hunter 715
    - (Leading Article) 741
  - South Australian Branch: Shortage of Hospital Accommodation in South Australia 344
  - Tasmanian Branch—
    - Meeting, Annual 636
  - Victorian Branch—
    - Annual Meeting 90
    - Annual Report of the Council 90
    - Appointment of Subcommittees 90
    - Attendances at Council Meetings 90
    - Business of Council 91
    - Election 90
    - Federal Council 92
    - Honours Conferred by His Majesty the King for Services Rendered during the Present War 91
    - Installation of the President for 1946 92
    - Library of the Medical Society of Victoria 92
    - Meetings of the Branch 91
    - Melbourne Permanent Post-Graduate Committee 92
    - Membership Roll 90
    - Mollison, Dr. C. H., Retirement of, from the Office of Honorary Treasurer 92
    - Notice 344
    - President's Address 92
    - Roll of Honour 91
    - Votes of Thanks 92
- Brody, J.—A Case of Tick Typhus in North Queensland (R) 511
- Broncho-Pulmonary Segments, The, in Skiagrams of the Chest (C.C.) 670

Page
Broome, K. H.—Blood Loss in Cæsarean Section ... 930
Broster, L. R. (Endocrine Man: A Study in the Surgery of Sex, with a foreword by P. C. Mitchell) (rev.) ... 84
Broughton Hall Psychiatric Clinic . 306
Brown, A. E.—Too Many Doctors? 606
Brown, C. J. Officer ... 27, 29, 61
  Putrid Lung Abscess (O) ... 107
  Some Notes on the Treatment of Pulmonary Tuberculosis (O) .. 825
Brown, D. A.—Poliomyelitis: A Question of Diagnosis ... 822
Brown, G. W., and Draper—Staphylococcal Enteritis in Children (O) ... 469
Brown, J.—Poverty, Housing and Health ... 29
Browne, F. J. ... 704
Bruce, James Whitson Kemp, Death of ... 132
Brues, A. M. ... 707
Bryce, L. ... 712
Buchanan, George Arthur, Death of 716
Bull, C. ... 23
Bulteau, A.—
  Poverty, Housing and Health ... 29
  Ulcers in the Mouth: An Appeal for Help ... 418
Bulteau, V.—A Case of Ludwig's Angina (R) ... 514
Burgess, J. N. ... 486, 487
Burma and Siam; Clinical Lessons from Prisoner of War Hospitals in the Far East, by A. E. Coates (O) ... 753
Burnet, F. M. ... 192
  (Virus as Organism: Evolutionary and Ecological Aspects of Some Human Virus Diseases) (rev.) 372
Burnet, J. (Outlines of Industrial Medicine, Legislation and Hygiene) (rev.) ... 20
Burniston, G. G.—Medical Rehabilitation: Its Organization in the Royal Air Force and the Royal Australian Air Force (O) 620
Burns, C. M. ... 26
Burns Complicated by Hæmatemesis and Melena. Report on a Case of, by J. A. Marsden (R) ... 551
Burrett, A. F.—Research at the Kanematsu Institute ... 782
Burrows, H. (Biological Actions of Sex Hormones) (rev.) ... 920
Burt, L. I.—Treatment of Suppurative Tenosynovitis in the Fingers (O) ... 399
Butler, A. G.—War and Humanism 165
Butler, H. M.—Stained Smears for the Rapid Diagnosis of Infections due to Streptococcus Hæmolyticus Group A following Childbirth and Abortion (O) ... 437
Buzzard, I. ... 534
Byrne, K.—Malaria ... 930

C

Cæsarean Section, Blood Loss in—
  By L. Benson (O) ... 842
  By K. H. Broome ... 930
Caffey, J. (Pediatric X-Ray Diagnosis: A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology) (rev.) 807
Calculus, Renal, Hydronephrosis and Hydroureter ... 163
Callagher, H. C.—Placenta Prævia .. 571
Callender, S. T. ... 743
Cameron, G. R., Professor, is Honoured (C.C.) ... 671
Campbell, A. D., Beveridge and Lind—Pleuropneumonia-Like Organisms in Cases of Non-Gonococcal Urethritis in Man and in Normal Female Genitalia (O) .. 179
Campbell, Alice Pritchard, Death of 311
Campbell, K. ... 60, 451, 675, 710, 712
  Clinical Aspects of Fœtal Erythroblastosis (O) ... 686
Canada—
  And the United States, Recent Experiences in, by H. M. James (O) ... 827
  Post-War Plans for Nutrition in .. 93
Canada Letter ... 236, 604, 929
Cancer, Early Diagnosis and Early Treatment of, The: A Publicity Campaign ... 571
Canny, A. J. ... 631
  Australia and Science: The University of Sydney and Scientists 381
  Research at the Kanematsu Institute ... 642, 895

Page
Captivity, the Singapore, Medical Aspects of, by C. Harvey (O) .. 769
Carbon Monoxide Metabolized in the Body, Is? (C.C.) ... 483
Carcinoma—
  Adrenal, Causing Precocity ... 60
  Columnar-Celled, of the Rectum Treated by Radon; Preliminary Report, Sixteen Months after Treatment, by P. D. Braddon (R) ... 477
  Of the Bladder with Bilateral Transplantation of Ureters ... 379
  Ovarian in a Fœtus (C.C.) ... 707
Cardiac Disease, Diagnostic Methods in (C.C.) ... 886
Carr, Surgeon Captain W. J.—
  And Air Vice-Marshal T. E. V. Hurley, The Retirement of ... 558
  Retiremtnt of, The (Leading Article) ... 117
Castle, W. B. ... 920
Casualties, Battle, Plasma Protein Estimations in, by T. E. Wilson (O) ... 153
Cataract Operation, Premedication and Cooperation in ... 674
Cataract, Secondary, The Treatment of ... 674
Cates, H. A., and Boileau-Grant (A Handbook for Dissectors) (rev.) 704
Caughey, J. E., and Porteous—An Epidemic of Poliomyelitis Occurring among Troops in the Middle East (O) ... 5
Cell, The Bacterial: In its Relation to Problems of Virulence, Immunity and Chemotherapy, by R. J. Dubos, with an Addendum by C. F. Robinow (rev.) ... 515
Centenaries of "Forty-Five", by H. Sutton (O) ... 421
Central Hospital, Melbourne, The—
  By C. H. Dickson ... 30
  By C. L. McVilly ... 203
Cerebral Trauma and its Mechanisms (Leading Article) ... 885
Chair of Child Health at the University of Sydney ... 601
Chalmers, C. H. (Bacteria in Relation to the Milk Supply: A Practical Guide for the Commercial Bacteriologist) (rev.) ... 479
Chambers, C. H., and Thompson—Chylangioma of the Mesentery, with Report of a Case, and a Brief Discussion of Mesenteric Cysts (O) ... 210
Chest Examination: The Correlation of Physical and X-Ray Findings in Diseases of the Lung, by R. R. Trail, with foreword by W. L. Langdon-Brown (rev.) ... 703
Chest, Introduction to Diseases of the, by J. Maxwell (rev.) ... 228
Chesterman, J. T. (The Treatment of Acute Intestinal Obstruction) (rev.) ... 156
Child, Pre-School, in Australia, The Health of (C.C.) ... 374
Childbirth—
  And Abortion, Infections due to Streptococcus Hæmolyticus Group A following, Stained Smears for the Rapid Diagnosis of, by H. M. Butler (O) ... 437
  Control of Pain in, by C. B. Lull and R. A. Hingston, with an introduction by N. W. Vaux (rev.) ... 408
Childhood, Nutrition and Chemical Growth in, by I. G. Macy, with a foreword by L. Reynolds and a supplement by J. O. Holmes (rev.) ... 884
Children's Hospital, Melbourne ..27, 59, 92, 129, 162, 450, 486, 636, 675, 710, 890, 928
  Survey from the, A: Cœliac Disease, by G. E. M. Scott (O) 659
Chiropodists, Recognition of ... 601
Chiropody, The Essentials of, by C. A. Pratt (rev.) ... 408
Chloroform, Spinal Anæsthesia and: A Comparison of Mortality—
  By C. E. Corlette (O) .. 545, 892
  By S. V. Marshall ... 750
  By J. E. Thomas ... 750
Chloroma ... 163
Chondritis of the Patella, by N. Little and C. Hudson (O) ... 398
Chorea—
  Chronic Progressive ... 308
  Huntington's ... 308

Page
Chorioretinitis, Toxoplasmic Encephalomyelitis and ... 674
Christie, R.—
  And North—Acquired Resistance of Staphylococci to the Action of Penicillin (O) ... 176
  And Simmons—Penicillin Sensitivity of Streptococci Mostly of Groups A, B, C and G (O) ... 349
Chromoblastomycosis, with Reports of Two Cases Occurring in Queensland, by W. J. Saxton, F. Hatcher and E. H. Derrick (O) 695
Chylangioma of the Mesentery, with Report of a Case and a Brief Discussion of Mesenteric Cysts, by G. C. V. Thompson and C. H. Chambers (O) ... 210
Clark, F. J.—
  Recent Advances in the Surgical Treatment of Lumbar Intervertebral Disk Disease (O) ... 49, 417
  Trigeminal Neuralgia ... 895
Clark, W. E. Le Gros (The Tissues of the Body: An Introduction to the Study of Anatomy) (rev.) ... 479
Clayton, George Edward Burdekin, Death of ... 716
Cleland, J. B. ... 817
  Acceptable Words: Quotations with a Medical Bearing (O) ... 876
  And Hamilton—A Case of Abdominal Lymphangioendothelioma or Peritoneal Mesothelioma (R) 477
  Moulds in the Lungs (R) ... 247
  Unknown Foreign Bodies in the Lung (R) ... 225
Clements, F. W. ... 374
Clemons, G. M. W. ... 636
  Changing Face, The, of Medical Practice in Tasmania—An Adress (O) ... 609
Climatic Factors and the Nutrition of Herbage Plants ... 817
Cloward, R. B. ... 118
Clune, F.—Pacific Parade (note) .. 704
Coal Inquiry ... 601
Coates, A. E.—Clinical Lessons from Prisoner of War Hospitals in the Far East (Burma and Siam) (O) ... 753
Cobb, S. ... 300
Cobley, J. F. C. C. ... 555
  And Wilson—Report of a Case of Salmonella Blegdam Septicæmia and Suppurative Pericarditis with Recovery (R) ... 439
Cœliac Disease, A Survey from the Children's Hospital, Melbourne, by G. E. M. Scott (O) ... 659
Cœliac Syndrome ... 675
Cold Hæmagglutinins, The Clinical Significance of (C.C.) ... 743
Colquhoun, J. ... 486, 890, 891
Colville, H. C. ... 130
Commodore, The, by C. S. Forester (note) ... 116
Commonwealth Employees' Compensation Act ... 565
Commonwealth Serum Laboratories, Products from the ... 565
Congresses, The Australian and New Zealand Association for the Advancement of Science ... 823
Constipation, Intractable, A Case of—
  By D. Bickart ... 166
  By A. E. Lee ... 165
Contact Lenses ... 674
Contracture, Volkmann's Ischæmic, of the Forearm, by L. Ball (R) 224
Control of Medical Practitioners of Recent Graduation ... 570
Convalescence after Surgical Procedures (C.C.) ... 594
Convulsive Therapy in Forward Areas, Psychotic Casualties in New Guinea, with Special Reference to the Use of, by D. Ross (O) ... 830
Conybeare, J. J. ... 408, 776
Coordination Committee, Queensland Medical ... 123
Cope, O. ... 779
Copeman, W. S. C. ... 373
Corcoran, A. C., and Page (Arterial Hypertension: Its Diagnosis and Treatment) (rev.) ... 83
Corkill, A. B., Pollock and Smith—The Value of Biochemical Tests in the Interpretation of Jaundice (O) ... 617
Corlette, C. E.—Spinal Anæsthesia and Chloroform: A Comparison of Mortality ... 892
  (O) ... 545

Page
Correspondence—
Adequacy, The, of Medical Training, by K. J. B. Davis 275
Amicrobic Pyuria, by I. Monk 785
"Atebrin" and Dermatitis: An Inquiry—
By "Inquirer" 607
By N. Paul 715
Australia and Science: The University of Sydney and Scientists—
By A. J. Canny 381
By N. E. Goldsworthy 346
By D. R. Moore 418
By F. W. Simpson 417
Bacille Calmette Guérin, by J. A. R. Murphy 930
Basic Wage, The, Shortage of Nurses and Social Medicine, by M. C. DeGaris 785
"Beach Foot", by E. Pockley 346
Blood Loss in Cæsarean Section, by K. H. Broome 930
Can Epilepsy be Cured?, by R. S. Ellery 30
Case, A, of Intractable Constipation—
By D. Bickart 165
By A. E. Lee 165
Central Hospital, Melbourne, The—
By C. H. Dickson 30
By C. L. McVilly 203
Congenital Fibrocystic Disease of the Pancreas, by L. Dods 929
Digestion, The, of Dogs and Chronic Osteomyelitis, by "Curious" 275
Disclaimer, A, by A. W. Morrow 678
Epidemic Polyarthritis, by J. R. Nimmo 380
Federal Medical War Relief Fund, The—
By W. F. Simmons 418
By M. Thornton 418
Functional Disorders—
By W. S. Dawson 275
By A. A. Pain 131
Future, The, of Medical Practice, by C. H. Jaede 823
Honorary Medical Staffs, by C. C. McKellar 894
Inguinal Hernia and its Repair—
By C. Craig 274, 678
By L. S. Loewenthal 381
Intervertebral Disk, The—
By W. H. Godby 237
By D. Miller 346
By M. A. Radcliffe-Taylor 237, 454
Late Herbert Michael Moran, The, by E. H. Molesworth 311
Legacy Club, The, by E. P. Blashki 63
Malaria—
By K. Byrne 930
By M. R. Finlayson and J. McF. Rossell 784
National Health Service Bill of Great Britain, The, by S. Siedlecky 893
"Non-Take" Spinal Analgesia, by P. Gill 606
Observations on Psychoses Occurring in Service Personnel in Forward Areas, by F. W. Graham 785
Obstetric Bulletins, by B. T. Mayes 275
Occult Amœbiasis in Ex-Prisoners of War, by C. E. M. Gunther 490
On the Prickly Heat—
By J. P. O.Brien 164
By C. White 382
Organization of a Profession, by E. S. Meyers 784
Pharmaceutical Benefits Act, The, 1944, by L. R. Jury 893
Placenta Prævia—
By H. C. Callagher 571
By B. T. Mayes 715
By J. N. R. Stephen 490, 893
Placing, The, of X-Ray Films in Envelopes, by D. Anderson 930
Poliomyelitis: A Question of Diagnosis, by D. A. Brown 822
Politics and the Medical Profession—
By A. Barber 416
By P. G. Dane 417, 784
By E. P. Dark 534, 929
By G. O'Day 273
By N. Pern 416, 677
Poverty, Housing and Health—
By J. Brown 29
By A. Bulteau 29
Professor Ralph Stockman, by M. Kelly 822
Psychiatric Programme for Peace, A, by C. I. McLaren 677

Page
Correspondence—*Continued.*
Psychotherapy, by A. A. Pain 859
Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease—
By F. Clark 417
By D. Miller 274
By J. H. Young 382
Renal Failure and Anoxia, by J. Walker Tomb 63
Research—
At Sydney Hospital, by N. Rose 750
At the Kanematsu Institute—
By A. F. Burrett 782
By A. J. Canny 642, 895
By J. C. Eccles 641
By W. W. Ingram 783
By T. H. Vickers 642
Services Medical Officers' Association of New South Wales, by J. M. Yeates 785
Special Represenative Meeting in London, The, by H. Hunter 715
Spelling of Words, The, by D. Monk Adams 345
Spinal Anæsthesia and Chloroform: A Comparison of Mortality—
By C. E. Corlette 892
By S. V. Marshall 750
By J. E. Thomas 750
Spondylitis Ankylopoietica—
By E. Haslett Frazer 453, 677
By "Froach Eilean" 535
Surgical and Applied Anatomy of the Inguinal Region, by E. S. Meyers 237
"Thio" Drugs in Thyreotoxicosis, by H. R. G. Poate and S. L. Spencer 750
Too Many Doctors?, by A. E. Brown 606
Toothache and Folk-Lore, by P. G. Dane 275
Treatment of Gunshot Wounds of the Chest in the Field by Penicillin Therapy, by P. Braithwaite 418
Treatment of Scabies, The, by J. G. Morris 380
Treatment, The, of Inguinal Hernia, by C. Craig 345
Trigeminal Neuralgia—
By F. J. Clark 895
By A. Lyons 750
Tsutsugamushi Disease: A Warning, by J. T. Gunther 419
Tuberculosis Patients and Hospitals—
By A. H. Penington 237
By D. B. Pitt 30
Ulcers in the Mouth. An Appeal for Help—
By A. Bulteau 418
By L. Hewitt 418
By B. Hiller 490
By "M.B. B.S." 274
By F. F. McMahon 715
By E. M. Murphy 534
By I. Roxon-Ropschitz 382
Unusual Case of Malaria, An—
By N. Cunningham 453
By R. F. Matthews 380
Use, The, and Misuse of Tetanus Antitoxin, by S. Sheldon 131
War and Humanism, by A. G. Butler 165
Wounds Caused by Small Fish—
By H. Flecker 534
By K. F. D. Sweetman 345
Yaws and Beriberi: A Warning, by C. M. Deland 676
Correspondence, Special—
Canada Letter 236, 604, 929
London Letter 603
New Zealand Letter 344, 676
Corrigendum 348
Cosh, John Inglis Clark, Death of 311
Cottrell, J. D. 669
Counseling, Personality Factors in, by C. A. Curran, preface by M. J. Ready, introduction by C. R. Rogers (rev.) 807
Counsell, W. D. 674
Craig, C.—
Inguinal Hernia and its Repair 274, 678
Treatment, The, of Inguinal Hernia 345
Cricket Match 491
Crooke, Robert Warren, Death of 895
Crosse, V. M. (The Premature Baby, with a foreword by L. G. Parsons) (rev.) 20
Crowther, W. E. L. H. 786
Case, A, of So-Called Hydrophobia: A Matter of Diagnosis (O) 69

Page
Croxatto, H. and R. 810
Croydon Obstetric Service (C.C.) 554
Cummine, H. G., and Laidley—The Empirical Use of Penicillin for a Sulphonamide-Resistant Patient (R) 476
Cunningham, N.—An Unusual Case of Malaria 453
Curd, F. H. S. 229
"Curious"—The Digestion of Dogs and Chronic Osteomyelitis 275
Curran, C. A. (Personality Factors in Counseling, preface by M. J. Ready, introduction by C. R. Rogers) (rev.) 807
Curran, D., and Guttmann (Psychological Medicine: A Short Introduction to Psychiatry, with an Appendix on Psychiatry Associated with War Conditions, with a foreword by J. J. Conybeare) (rev.) 776

Current Comment—
Action of Iodine in Graves's Disease 779
Amœbic Pericarditis 159
Angina Pectoris 632
Annals of the Montevideo Faculty of Medicine 158
Araneidism 811
Arterial Embolism and Thrombosis in Infancy 87
Availability, The, of Vitamins in Various Foods and Pharmaceutical Products 410
"Blood", A Journal Devoted to Hæmatology 743
Bone as Human Food 595
Brain, The, of Dr. Robert Ley 447
Broncho-Pulmonary Segments, The, in Skiagrams of the Chest 670
Cerebral Hydatid Cyst 446
Clinical Significance, The, of Cold Hæmagglutinins 743
Complete Obstetric Service, A 554
Congenital Afibrinogenæmia 375
Congenital Defects in Infants after Maternal Rubella: Further Reports and Discussions 23
Convalescence after Surgical Procedures 594
Diagnostic Methods in Cardiac Disease 886
Dr. J. G. Hunter Flies to England 595
Droplet Spray Infection and Respiratory Activity 447
Effect of Emetine on the Heart, The 669
Epistaxis 669
Excretion of Iron 303
Experimental Study, An, on Pancreatic Secretion and Division of the Pancreas 483
Eye Signs in Graves's Disease, The 521
Fat Embolism 671
Foams and Living Tissues 86
Future Health Services in Great Britain 482
Health, The, of the Pre-School Child in Australia 373
Heart Sounds in Health 158
Hypertensin 810
Index to "The Medical Journal of Australia" 447
International Medical Conference, An 633
Is Carbon Monoxide Metabolized in the Body? 483
Jean-Paul Marat: Visionary or Villain? 340
Lesions of the Mouth and Iron Deficiency 850
Lessons from Spinach 922
Medical Annual, The 341
Medical Education and Medical Practice in Germany during the War 923
Medical History, The, of the War of 1939-1945 633
Modern Treatment in Acute Nephritis 742
Murmurs from Turbulent Flow 339
Muscular Lesions in Rheumatoid Arthritis 670
New York Festschrift, A 193
Ovarian Carcinoma in a Fœtus 707
Penicillin and the Skin 411
Placebo, The 887
Porphyria 250
Post-War Germany: A Psychiatric Problem 119
Prevention, The—
Of Influenza 192
Of Leakage after Intestinal Anastomosis 887
Of Sunburn 375

Page
Current Comment—*Continued.*
  Problem, The, of Early Pulmonary Tuberculosis 778
  Professor G. R. Cameron is Honoured 671
  Prognosis, The, in Subarachnoid Hæmorrhage 22
  Pulmonary Eosinophilosis 55
  Results, The, of Prefrontal Leucotomy 118
  Retropubic and Extravesical Prostatectomy 230
  Sleep Paralysis 811
  "Stevens-Johnson Syndrome, The" 193
  Thoracic Complications of Typhoid and Salmonella Infections 555
  Tick Paralysis 339
  Toothache and Folk-Lore 54
  Toxic Factors in Experimental Shock 707
  Toxicity of Thiouracil, The 850
  Transient Disturbances following Head Wounds 706
  Twenty-Fifth Anniversary, A 411
  Two Causes of Pain in the Right Iliac Fossa 303
  Ulcer Problem, The 632
  Unusual Œstrogen Reaction in a Boy 595
  Unusual Recto-Vesical Injury, An 743
Currie, J. R. 630
Cyst, Hydatid, Cerebral (C.C.) 446
Cystic Disease, Congenital—
  Of the Kidneys 450
  Of the Lung 450
Cysts, Mesenteric, Chylangioma of the Mesentery, with Report of a Case, and a Brief Discussion of, by G. C. V. Thompson and C. H. Chambers (O) 210

D

Dacryocystostomy, Endonasal, West's Operation, Some Notes on, by G. A. D. McArthur (O) 508
Dale, J. 90, 92
  An Address—Politics and the Medical Profession (O) 65
Dameshek, W. 743
Danber, D. V. 193
Dandy, W. E. 53
Dane, P. G.—
  Politics and the Medical Profession 417, 784
  Toothache and Folk-Lore 275
Dangerous Drugs Regulations of Victoria 382
Danielson, R. W. 23
Darby, W. J. 850
Dark, E. P.—Politics and the Medical Profession 534, 929
Darling, H. C. R. 823
Davey, D. G. 229
Davies, Harold Whitridge, Death of 859
Davies, J. H. Twiston 411
Davis, K. J. B.—The Adequacy of Medical Training 275
Dawson, W. S.—Functional Disorders 275
Day, A. 93
"DDT" Poisoning in Man, by I. M. Mackerras and R. F. K. West (R) 400
Deafness, Post-Rubella 565
Death, Sudden, following Initial Injection of a Mercurial Diuretic, by A. Murphy (R) 589
de Burgh, P. M.—
  Notes on Field's Stain (O) 544
  Use, The, of a Polysaccharide of Bacillus Proteus OXK in the Diagnosis of Scrub Typhus (O) 81
Defects, Congenital, in Infants, after Maternal Rubella: Further Reports and Discussions (C.C.) 23
Deformities—
  Among Recruits, An Analysis of, with Remarks on Sub-Standard Types, by W. E. Roberts (O) 360
  Multiple Congenital 450
Deformity, Congenital, of the Bowel 854
DeGaris, M. C.—The Basic Wage, Shortage of Nurses and Social Medicine 785
Deland, C. M.—Yaws and Beriberi: A Warning 676
Delohery, H. J., and Miller—Staphylococcal Meningitis and Ventriculitis: Cure by Penicillin (R) 512
Dementia—
  Paralytica 306
  Presenile 309
Denny-Brown, D. 250

Page
Dental Service, a Comprehensive, A Report from Great Britain on (Leading Article) 593
Dental Students, Essentials of Surgery for, by J. C. Ross (rev.) 372
Derham, A. P. 451, 452, 890, 928
Dermatitis, "Atebrin" and: An Inquiry—
  By "Inquirer" 607
  By N. Paul 715
Dermatology, An Introduction to, with a Chapter on the Theory and Technique of X-Ray and Radium Therapy, by E. H. Molesworth, with a Foreword to the First Edition by J. Jadassohn (rev.) 227
Derrick, E. H. 157
  Acute Porphyria, with Reports of Two Fatal Cases (O) 241
  Saxton and Hatcher—Chromoblastomycosis, with Reports of Two Cases Occurring in Queensland (O) 695
Deutsch, H. (The Psychology of Women: A Psychoanalytic Interpretation, with a foreword by S. Cobb) (rev.) 300
Devine, J. 887
Diabetes Mellitus with Hyperlipæmia and Hypercholesterolæmia, by A. M. Henderson (R) 513
Diary for the Month 32, 64, 96, 132, 168, 204, 240, 276, 312, 348, 384, 420, 456, 492, 536, 572, 608, 644, 680, 716, 752, 788, 824, 860, 896, 932
Dick, B. M., and Illingworth (A Text-Book of Surgical Pathology) (rev.) 336
Dick, G. F. 920
Dickson, C. H.—The Central Hospital, Melbourne 30
Dietary Deficiencies and Oral Structures (Leading Article) 85
Dietetics, Tropical, Nutrition and, by L. Nicholls (rev.) 516
Dietz, D. (Atomic Energy in the Coming Era) (rev.) 629
Discipline, Clinical (Leading Article) 409
Disclaimer, A, by A. W. Morrow 678
Diseases—
  Infectious, During Pregnancy, Congenital Abnormalities in Infants following, with Special Reference to Rubella: A Third Series of Cases, by C. Swan and A. L. Tostevin (O) 645
  Of the Chest, Introduction to, by J. Maxwell (rev.) 228
  Of the Lung, The Correlation of Physical and X-Ray Findings in: Chest Examination, by R. R. Trail, with foreword by W. L. Langdon-Brown (rev.) 703
  Virus, Some Human, Evolutionary and Ecological Aspects of: Virus as Organism, by F. M. Burnet (rev.) 372
Disk Disease, Lumbar Intervertebral—
  Recent Advances in the Diagnosis and Treatment of—
    By F. Clark 417
    By D. Miller 274
    By J. H. Young 382
    (O) 45
  Recent Advances in the Surgical Treatment of, by F. J. Clark (O) 49
Disk, The Intervertebral—
  By W. H. Godby 237
  By D. Miller 346
  By M. A. Radcliffe-Taylor 237, 454
  (Leading Article) 53
Dislocation, Congenital, of the Hip 855
Dissectors, A Handbook for, by J. C. Boileau-Grant and H. A. Cates (rev.) 704
Diuretic, Mercurial, Sudden Death following Initial Injection of a, by A. Murphy (R) 589
Dixon, K. 411
Dixon, Mr. Justice 267
Doctors, Too Many?, by A. E. Brown 606
Dods, L. 814
  Congenital Fibrocystic Disease of the Pancreas 929
Dogs, The Digestion of, and Chronic Osteomyelitis, by "Curious" 275
Doherty, M. K., Sirl and Ring (Modern Practical Nursing Procedures) (rev.) 630
D'Ombrain, A. W. 674
Donald, W. D. 339
Donaldson, G. M. M. 375

Page
Dowling, P. G.—Epidemic Polyarthritis (O) 245
Downes, H. R. 849
Downing, H. F. 703
Dowson-Weisskopf, A. B. (Industrial Nursing: Its Aims and Practice, with a foreword by E. Summerskill) (rev.) 84
Draper, F., and Brown—Staphylococcal Enteritis in Children (O) 469
Drinker, C. K. (Pulmonary Edema and Inflammation: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates) (rev.) 739
Droplet Spray Infection and Respiratory Activity (C.C.) 447
Drugs, The Nomenclature of 567
Dubos, R. J. (The Bacterial Cell: In its Relation to Problems of Virulence, Immunity and Chemotherapy, with an addendum by C. F. Robinow) (rev.) 515
Dubos, R. T. 707
Duguid, J. P. 447
Duhig, J. V. 157
Duncan, C.—Blood Groups in Tasmania (O) 475
Dunlop, E. E.—Clinical Lessons from Prisoner of War Hospitals in the Far East (O) 761
Dunn, S. R. 234

E

Eccles, J. C. 631
  Research at the Kanematsu Institute 641
Ectodermal Dysplasia, Congenital 815
Eddy, C. E.—The Fiftieth Anniversary of the Discovery of X Rays (O) 138
Edema, Pulmonary, and Inflammation: An Analysis of Processos Involved in the Formation and Removal of Pulmonary Transudates and Exudates, by C. K. Drinker (rev.) 739
Editorial Notices 32, 64, 96, 132, 168, 204, 240, 276, 312, 348, 384, 420, 456, 492, 536, 572, 608, 644, 680, 716, 752, 788, 824, 860, 896, 932
Edman, P. 810
Education, Medical, and Medical Practice in Germany during the War (C.C.) 923
Edwards, A. T. 926
  Some Remarks on Psychotic Ex-Servicemen (O) 738
Edwards, J. G. 239
Electrocardiograms 378
Ellery, R. S.—
  Can Epilepsy be Cured? 30
  (Psychiatric Aspects of Modern Warfare) (rev.) 189
  Psychiatric Programme for Peace, A (O) 457
Embelton, D. M., and Jones—Volvulus of the Small Bowel, with Report of a Case Treated by Resection with Recovery (O) 144
Embolism—
  Arterial, and Thrombosis in Infancy (C.C.) 87
  Fat (C.C.) 671
Emergency Medical Service, The 569
Emetine, The Effect of, on the Heart (C.C.) 669
Encephalitis—
  Lethargica, A Syndrome Resembling Disseminated Sclerosis as a Sequel to 308
  Post-Varicellal, A Case of, showing Bilateral Softening of the Neostriatum and Terminal "Tetanoid Chorea" (Gowers), by C. Swan (R) 697
Endocrine Man: A Study in the Surgery of Sex, by L. R. Broster, with a foreword by P. C. Mitchell (rev.) 84
Endocrinology—
  Neurology, Psychiatry and, The 1945 Year Book of, edited by H. H. Reese *et alii* (rev.) 919
  Of Woman, by E. C. Hamblen (rev.) 665
Entamœba Histolytica, The Detection of the Cysts of, in the Fæces by Microscopic Examination, by A. T. Marsden (O) 915

Page
Enteric Fever due to Bacterium Enteritidis Var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from New Guinea, by F. Fenner and A. V. Jackson (O) 313
Enteritis, Staphylococcal, in Children, by F. Draper and G. W. Brown (O) 469
Eosinophilosis, Pulmonary (C.C.) .. 55
Epidemiology, Global: A Geography of Disease and Sanitation, by J. S. Simmons, T. F. Whayne, G. W. Anderson, H. M. Horack and collaborators (rev.) 591
Epilepsy—Can Epilepsy be Cured?, by R. S. Ellery 30
Epiphyses, Premature Union of ... 486
Episiotomy and Perineal Repair .. 200
Epistaxis (C.C.) 669
Ercole, Q. N. 234
Erythroblastosis—
  Adrenal Hæmorrhage in 163
  Fœtal 710
    Clinical Aspects of, by K. Campbell (O) 686
Ethics, Medical, The Principles of .. 570
Eusterman, G. B. 920
Evans, C. Lovatt (Principles of Human Physiology, with section on the special senses by H. Hartridge) (rev.) 704
Eve, F. C. (Artificial Respiration Explained) (note) 516
Evidence at Inquests, Medical Practitioners and 345
Examinations, Rypins' Medical Licensure: Topical Summaries, Questions and Answers, edited by W. L. Bierring (rev.) 740
Exophthalmos, Unilateral Pulsating, due to a Defect of the Orbital Wall 674
Exposure, Extensile, Applied to Limb Surgery, by A. K. Henry (rev.) 444
Ex-Servicemen, Psychotic, Some Remarks on, by A. T. Edwards (O) 738
Eye Diseases—A Sociological Study of the Aborigines in the Northern Territory and their, by M. Schneider (O) 99
Eyes (Leading Article) 705

F

Fagan, K. J.—Surgical Experiences as a Prisoner of War (O) 775
Fairley, N. Hamilton 229, 234
Fantl, P.—The Bleeding Tendency in Obstructive Jaundice: Diagnosis and Management (O) ... 547
Fass, E. 809
Fat Embolism (C.C.) 671
Feddersen, A. S. 533
Federal Medical War Relief Fund 123, 312, 419, 455, 492, 536, 559, 572, 600, 607, 644, 680, 716, 751, 788, 824, 859, 932
  By W. F. Simmons 418
  By M. Thornton 418
  (Leading Article) 229
Fees for Medical Examinations 567
Fellowships, Overseas Travelling, 383, 558
Femur and Fibula, Congenital Absence of 26
Fenn 483
Fenner, F., and Jackson—Enteric Fever, due to Bacterium Enteritidis Var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from New Guinea (O) 313
Festschrift, A New York (C.C.) .. 193
Fetherston Memorial Lecture, The R. H., by A. M. Wilson (O) 1
Fibrocystic Disease—
  Congenital, of the Pancreas—
    By P. E. Blaubaum (O) 833
    By L. Dods 929
  Pseudoarthrosis of the Tibia due to 26
Fibula, Femur and, Congenital Absence of 26
Fielding, J. W.—
  Further Observations on Rat Leprosy (O) 681
  Observations on Human Leprosy: Infection of Rats with Human Excretal Organisms (O) 578
Field's Stain, Notes on, by P. M. de Burgh (O) 544
Fincke 922
Finlayson, M. R., and Rossell—Malaria 784
Firor, W. B. 666
Fischer, A. E. 193
Fish, Small, Wounds Caused by—
  By H. Flecker 534
  By K. F. D. Sweetman 345
"Fixanol C" (Cetyl Pyridinium Bromide), Bactericidal Action of, The Treatment of Hospital Blankets with Oil Emulsions and the, by P. M. Rountree (O) 539
Flecker, H.—Wounds Caused by Small Fish 534
Fluids, Intravenous Administration of, A Trocar and Cannula for the, by R. V. Pratt (O) 629
Flynn, R.—Congenital Stricture of the Œsophagus (R) 702
Foams and Living Tissues (C.C.) .. 86
Foley, The Honourable T. A. 157
Folk-Lore, Toothache and (C.C.) .. 54
Food Consumption in Australia (Leading Article) 21
Food Shortage, The World (Leading Article) 921
Food, The Relationship of, to Health, by M. Hutchings (O) 796
Foot, Beach, by E. Pockley 346
Foreign Bodies, Unknown, in the Lung, by J. B. Cleland (R) 225
Forester, C. S. (The Commodore) (note) 116
Forster, W. 640
Foster-Carter, A. F. 670
Fracture of the Pelvis Complicated by Intrapelvic Rupture of the Urethra 379
Fractures—
  Compound, of the Extremities, due to Gunshot Wounds: The Early Results of Treatment in the Field Aided by Penicillin Therapy, by T. F. Rose and A. Newson (O) 330
  Of the Carpal Scaphoid, by J. R. Barbour (O) 352
Francis, T., junior 192
Frank, R. T. 193
Frayne, Ernest John, Death of 895
Frazer, E. Haslett 58
  Spondylitis Ankylopoietica .. 453, 677
Freedberg, A. S. 632
Freund, H. 670
"Froach Eilean"—Spondylitis Ankylopoietica 535
Fryberg, A. 157
Fullerton, Alexander Young, Death of 490
Functional Disorders—
  By W. S. Dawson 275
  By A. A. Pain 131
Fungi, Exploring the Higher 817

G

Gabriel, W. B. (The Principles and Practice of Rectal Surgery) (rev.) 228
Gaha, T. R.—Latent Primary Breast Tumour (R) 590
Game, J.—A Case of Periarteritis (Polyarteritis) Nodosa (R) 295
Gangrenous Toes, Local Amputation of, in the Presence of Glycosuria and Senility, by N. C. Joel (R) 298
Gardner, B., Woodward *et alii* (Obstetric Management and Nursing) (rev.) 703
Gardner, H. 555
Gargoylism 890
Germany—
  Medical Education and Medical Practice in, during the war (C.C.) 923
  Post-War: A Psychiatric Problem (C.C.) 119
Gill, P.—"Non-Take" Spinal Analgesia 606
Gillespie, W. P. 703
Gilmour, W. 670
Glaister, J. (Medical Jurisprudence and Toxicology) (rev.) 480
Glaucoma, Traumatic Monocular Chronic 674
Godby, W. H.—The Intervertebral Disk 237
Goddard, T. H. 636
Goldsworthy, N. E.—Australia and Science: The University of Sydney and Scientists 346
Gonorrhœa, Penicillin Therapy in the Treatment of, The Results of, by S. Siedlecky (O) 904
Goodell, H. 23
Graham, E. A. 883
Graham, F. W.—Observations on Psychoses Occurring in Service Personnel in Forward Areas .. 785
Graham, Walter Robert, Death of .. 32
Graves's Disease—
  Action of Iodine in, The (C.C.) .. 779
  Eye Signs in, The (C.C.) 521
Graydon, J. J.—
  And Simmons—
    Blood Groups in the Maori (O) 135
    Rh Blood Types, The, and their Reactions (O) 861
  Simmons and Woods—
    Blood Group Frequencies in Hollanders (O) 576
    Further Observations on the Rh and Hr Factors, and the Blood Group Frequencies in Papuans (O) 537
Green Armour, by O. White (note) . 516
Green, J. 202, 711
Greene, J. A. 303
Greenhill, J. P. 884
Greenwood, Mr. 741
Gregersen, M. I. 483
Gregg, N. McAlister 674
Gregory, T. S. 234
Grier, R. C., junior 339
Grieve, J. W. 60, 61, 93, 675, 890
Griffiths, G. 488, 670
Grinker, R. R., and Spiegel (War Neuroses) (rev.) 630
Gross, R. E. 87
Grove, J. L.—Tetanus Treated with Penicillin; Recovery (R) 226
Groves, H. (Synopsis of Surgery, edited by C. P. G. Wakeley) (rev.) 190
Growth, Chemical, Nutrition and, in Childhood, by I. G. Macy, with a foreword by L. Reynolds and a supplement by J. O. Holmes (rev.) 884
Gunblast, Experimental Observations on the Aural Effects of, by N. E. Murray and G. Reid (O) 611
Gunther, C. E. M.—
  New Conceptions of Malaria Control (O) 510
  Occult Amœbiasis in Ex-Prisoners of War 490
Gunther, J. T.—Tsutsugamushi Disease: A Warning 419
Guthrie, D. (A History of Medicine) (rev.) 443
Guttmann, E., and Curran (Psychological Medicine: A Short Introduction to Psychiatry, with an Appendix on Psychiatry Associated with War Conditions, with a foreword by J. J. Conybeare) (rev.) 776
Gwynne, F. J. 670
Gymnastics, Medical, Massage and, by M. V. Lace, with a foreword by J. Mennell (rev.) 248
Gynæcological Disorders, The Symptomatic Diagnosis and Treatment of, by M. M. White, with a foreword by F. J. Browne (rev.) 704
Gynæcology—
  Obstetrics and, The 1945 Year Book of, edited by J. P. Greenhill (rev.) 884
  Recent Advances in Obstetrics and, by A. W. Bourne and L. H. Williams (rev.) 299
  Synopsis of Obstetrics and, by A. W. Bourne (rev.) 666

H

Hæmagglutinins, Cold, The Clinical Significance of (C.C.) 743
Hæmangiomata of the Lower Limb 26
Hæmatology, "Blood", A Journal Devoted to (C.C.) 743
Hæmophilus Influenzæ—
  Resistance of, The, to the Action of Penicillin, with Special Reference to Type B Strains, by E. A. North, H. Wilson and G. Anderson (O) 626
  Type B, Rabbit Antiserum, The Treatment of Hæmophilus Influenzæ Meningitis with Sulphonamides in Conjunction with, by E. A. North, H. Wilson and G. Anderson (O) 215
Hæmorrhage, Subarachnoid, The Prognosis in (C.C.) 22

Page
Hahn, P. F. 339
Hair and Scalp, The, by A. Savill (rev.) 408
Haldane, J. S. 483
Hales, G. M. B. 854
Hall, R. D. McKellar—A Short Note on the Changing Outlook in Osteomyelitis brought about by the Introduction of Penicillin (R) 401
Hallam, K. 28, 451, 486, 487
Hallows, B. ... 28, 59, 60, 61, 486, 487
Hamblen, E. C. (Edocrinology of Woman) (rev.) 665

Hamilton, I.—
  And Cleland—A Case of Abdominal Lymphangioendothelioma or Peritoneal Mesothelioma (R) 477
  And Hardy—Hernia through the Foramen of Winslow Emerging through the Gastro-Hepatic Omentum (R) 805
Hamilton, J. Bruce 674
Hardie, David, Death of 95
Hardy, J. E. S., and Hamilton—Hernia through the Foramen of Winslow Emerging through the Gastro-Hepatic Omentum (R) .. 805
Hartridge, H. 704
Harvey, C.—Medical Aspects of the Singapore Captivity (O) 769
Hatcher, F., Saxton and Derrick—Chromoblastomycosis, with Reports of Two Cases Occurring in Queensland (O) 695
Hawker, R. W.—Studies in Nicotinic Acid (O) 872
Hay, Arthur, Death of 96
Hayden, F. 533
Hayes, W. Ivon 196, 532, 534
Hayward, G. W. 669
Head Wounds, Transient Disturbances following (C.C.) 706
Health—
  Of the Pre-School Child in Australia, The (C.C.) 374
  Poverty, Housing and—
    By J. Brown 29
    By A. Bulteau 29
  Relationship of Food to, The, by M. Hutchings (O) 796
Health Education Council, Queensland 124
Health Legislation in the United States of America, Discussions on (Leading Article) 301
Health Service Bill of Great Britain, The National 524
  (Leading Article) 517
Health Services, Future, in Great Britain 487
  (C.C.) 482
Heart Sounds in Health (C.C.) 158
Heath, C. W. (What People Are: A Study of Normal Young Men) (rev.) 444
Helmer 810
Hemivertebra, Spondylolisthesis and 26
Henderson, A. M.—A Case of Diabetes Mellitus with Hyperlipæmia and Hypercholesterolæmia (R) 513
Henderson, J. L. 375
Henry, A. K. (Extensile Exposure Applied to Limb Surgery) (rev.) 444

Henry, N. R.—
  And Simmons—Studies on Rh Iso-Immunization (O) 897
  Anti-O Agglutinin in Human Blood, The, with the Report of a Case of its Occurrence (O) 395
Herbage Plants, Climatic Factors and the Nutrition of 817
Herndon, R. F. (An Introduction to Essential Hypertension) (rev.) . 740

Hernia—
  Diaphragmatic 27
  Inguinal—
    And its Repair—
      By C. Craig 274, 678
      By L. S. Loewenthal 381
      By H. Turnbull (O) 109
    Treatment of, The
      By C. Craig 345
      By F. V. Stonham (O) 185
  Through the Foramen of Winslow Emerging through the Gastro-Hepatic Omentum, by I. Hamilton and J. E. S. Hardy (R) 805
Hess 339
Hewitt, L.—Ulcers in the Mouth: An Apepal for Help 418
Hewitt, W. E. 202
Hicks, J. D.—Lipomata of the Uterus, with Report of a Case (O) 184

High-Frequency Apparatus, The Restrictions on 570
Hill, A. 201
Hiller, B.—Ulcers in the Mouth: An Appeal for Help 490
Hingston, R. A., and Lull (Control of Pain in Childbirth, with an introduction by N. W. Vaux) (rev.) 408
Hirschfeld, Eugen, Death of 931
Hirst, G. K. 193
Historical Records 125
History, The Medical, of the War of 1939-1945 (C.C.) 633
Hochberg, M. 410, 411
Hocking *versus* Bell 254
Hollanders, Blood Group Frequencies in, by J. J. Graydon, R. T. Simmons and E. F. Woods (O) 576
Holmes, J. O. 884
Honours, The Order of Saint John of Jerusalem 164
Hookworm Disease in Australian Soldiers, with Reports of Cases, by C. B. Sangster (O) 385
Horack, H. M., *et alii* (Global Epidemiology: A Geography of Disease and Sanitation) (rev.) . 591
Hormones, Sex, Biological Actions of, by H. Burrows (rev.) 920
Horn, H. W. 122

Hospital—
  Broughton Hall Psychiatric Clinic 306
  Central Hospital, Melbourne, The—
    By C. H. Dickson 30
    By C. L. McVilly 203
  Children's Hospital, Melbourne . 27, 59, 92, 129, 162, 450, 486, 636, 675, 710, 890, 928
    Survey from the, A: Cœliac Disease, by G. E. M. Scott (O) 659
  Lewisham Hospital, Sydney 26
  Royal Alexandra Hospital for Children 814, 854
  Sydney Hospital 378, 631
    Research at, by N. Rose 750
  Women's Hospital, Melbourne, Obstetrical Staff of the 196, 530
Hospital Accommodation, Shortage of, in South Australia 344
Hospital Benefits Act, 1945 125

Hospital Blankets—
  As a Source of Infection, by P. M. Rountree and J. E. Armytage (O) 503
  Treatment of, The, with Oil Emulsions and the Bactericidal Action of "Fixanol C" (Cetyl Pyridinium Bromide), by P. M. Rountree (O) 539
Hospital Color and Decoration, by R. P. Sloan (note) 190

Hospitals—
  Staffing of, The: A Statement from England (Leading Article) 777
  Tuberculosis Patients and—
    By A. H. Penington 237
    By D. B. Pitt 30
Hospitals Act Amended 125

Housing—
  And Health, Poverty—
    By J. Brown 29
    By A. Bulteau 29
  Community, The Sociological Aspects of, by I. B. Sebire (O) .. 327
Howard, R. 451, 486, 640
Hoyle, C. 670
Hudson, C., and Little—Chondritis of the Patella (O) 398
Hudson, Catherine, and Hytten—The Tuberculin Patch Test: A Comparison with the Mantoux Test (O) 475
Human Body after Death, The Study of the, by K. Inglis (O) 222
Humanism, War and, by A. G. Butler 165
Hunter, H.—The Special Representative Meeting in London 715
Hunter, J. G. 553, 741
  Dr., Flies to England (C.C.) 595
Huntington's Chorea 308
Hurley, Air Vice-Marshal T. E. V., The Retirement of Surgeon Captain W. J. Carr and 558
Hurst, A. 53
Hurwitz, D. 23
Hutchings, J. 202
  And Wheildon — Post-Abortional Tetanus with Recovery (R) ... 404
Hutchings, M.—The Relationship of Food to Health (O) 796
Huxtable, C. 452

Huyck, J. H. 339
Hydatid Cyst, Cerebral (C.C.) 446
Hydronephrosis and Hydroureter, Renal Calculus 163
Hydrophobia, A Case of So-Called: A Matter of Diagnosis, by W. E. L. H. Crowther (O) 69
Hydroureter, Renal Calculus, Hydronephrosis and 163
Hygiene, Industrial Medicine, Legislation and, Outlines of, by J. Burnet (rev.) 20
Hyndman, O. R. 53
Hypercholesterolæmia, Hyperlipæmia and, A Case of Diabetes Mellitus with, by A. M. Henderson (R) 513
Hypertensin (C.C.) 810

Hypertension—
  Arterial: Its Diagnosis and Treatment, by I. H. Page and A. C. Corcoran (rev.) 83
  Essential, An Introduction to, by R. F. Herndon (rev.) 740
Hypnosis as a Substitute for Anæsthesia, Some Observations Concerning the Use of, by R. L. H. Sampimon and M. F. A. Woodruff (O) 393
Hypotonia, Generalized: A Case for Diagnosis 451
Hytten, F. E., and Hudson—The Tuberculin Patch Test: A Comparison with the Mantoux Test (O) 475

I

Illingworth, C. F. W., and Dick (A Text-Book of Surgical Pathology) (rev.) 336
Index to "The Medical Journal of Australia" (C.C.) 447
Industrial Nursing: Its Aims and Practice, by A. B. Dowson-Weisskopf, with a foreword by E. Summerskill (rev.) 84
Infection, Droplet Spray, and Respiratory Activity (C.C.) 447

Infections—
  Due to Streptococcus Hæmolyticus Group A following Childbirth and Abortion, Stained Smears for the Rapid Diagnosis of, by H. M. Butler (O) 437
  Tendon Sheath, of the Hard, Penicillin Therapy for, by J. A. Marsden (O) 435
Infectious Disease, Acute, Nursing in, by F. V. G. Scholes (rev.) 300
Inflammation, Pulmonary Edema and: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates, by C. K. Drinker (rev.) 739
Influenza, The Prevention of (C.C.) 192
Ingelfinger, F. J. 667
Inglis, K. 239
  Study, The, of the Human Body after Death (O) 222
Ingram, W. W.—Research at the Kanematsu Institute 783
Inguinal Region, The Surgical and Applied Anatomy of the, by E. S. Meyers 237
Injuries, Acute,, of the Head: Their Diagnosis, Treatment, Complications and Sequels, by G. F. Rowbotham (rev.) 20

Injury—
  "Blast", of the Spinal Cord, Report of a Fatal Case of, by D. Leslie (R) 188
  Recto-Vesical, An Unusual (C.C.) 743
Inoculations, Prophylactic, Some Complications and Sequelæ of the, by M. Kelly (O) 800
"Inquirer" — "Atebrin" and Dermatitis: An Inquiry 607
Intervertebral Disk Disease, Lumbar—
  Recent Advances in the Diagnosis and Treatment of—
    By F. Clark 417
    By D. Miller 274
    By J. H. Young 382
      (O) 45
  Recent Advances in the Surgical Treatment of, by F. J. Clark (O) 49

Intervertebral Disk, The—
  By W. H. Godby 237
  By D. Miller 346
  By M. A. Radcliffe-Taylor .. 237, 454
  (Leading Article) 53

Page

- Intussusception, Bowel Resection for 450
- Iodine in Graves's Disease, The Action of (C.C.) 779
- Iris Prolapse 674
- Iron Deficiency, Lesions of the Mouth and (C.C.) 850
- Iron, Excretion of (C.C.) 303
- Ironside, R. N., and Batchelor (Aviation Neuro-Psychiatry) (rev.) 480
- Iso-Agglutinin, An Immune Anti-M, in Human Serum, by R. J. Walsh (R) 115

J

- Jackson, A. V., and Fenner—Enteric Fever due to Bacterium Enteritidis Var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from New Guinea (O) 313
- Jackson Lecture 127
- Jacobs, H., and Bettinger—A Contribution to the Problem of Masculinization (O) 10
- Jadassohn, J. 227
- Jaede, C. H.—The Future of Medical Practice 823
- James, H. M.—Recent Experiences in Canada and the United States (O) 827
- Japan, Experiences as a Prisoner of War in, by S. E. L. Stening (O) 773
- Jaundice—
  - Obstructive, The Bleeding Tendency in: Diagnosis and Management, by P. Fantl (O) 547
  - Value, The, of Biochemical Tests in the Interpretation of, by A. B. Corkill, D. J. Pollock and G. E. Smith (O) 617
- Jens, J. 487
- Joel, N. C.—Local Amputation of Gangrenous Toes in the Presence of Glycosuria and Senility (R) 298
- Johnson, F. C. 193
- Johnstone, J. W. 196, 531
- Joints, Atlas of Surgical Approaches to Bones and, by T. Nicola (rev.) 808
- Jones, P., and Embelton—Volvulus of the Small Bowel, with Report of a Case Treated by Resection with Recovery (O) 144
- Jones, S. Evan 306
- Journal, The, and the Recent Industrial Unrest (Leading Article) 117
- Julius, S. 157
- Jurisprudence, Medical, and Toxicology, by J. Glaister (rev.) 480
- Jury, L. R.—The Pharmaceutical Benefits Act, 1944 893

K

- Kanematsu Institute 631
  - Research at the—
    - By A. F. Burrett 782
    - By A. J. Canny 642, 895
    - By J. C. Eccles 641
    - By W. W. Ingram 783
    - By T. H. Vickers 642
- Kaplan, I. L. 666
- Kater, N. M.—A Jungle Appendicectomy (R) 443
- Katz, L. N. 193
- Kelly, M.—
  - Professor Ralph Stockman 822
  - Some Complications and Sequelæ of the Prophylactic Inoculations (O) 800
- Kennedy, F. 84
- Kennedy, R. T.—
  - Remarkable "Dr." Spencer, The (O) 149
  - Young Dr. Storch of Adelong (O) 362
- Kepner, R. De M. 118
- Keratitis, Vitamin C (Ascorbic Acid) in 675
- Kern, F., junior 159
- Kersley, G. D. (Outlines of Physical Methods in Medicine) (rev.) 336
- Kety, S. S. 707
- Kinsella, V. J. 535
- Kirk, N. T. 808
- Knox, C. M. (Principles of Pediatrics and Pediatric Nursing) (rev.) 703
- Kohlstaedt 810
- Kosmak, G. W. 411
- Kruse, H. D. 669

L

- Labour—
  - Analgesia in 197
  - Management of, The 199
  - Progress of, The, and Palpation 196
  - Symposium on 196
  - Third Stage of, Management of the 199
  - Uterine Pains in 196
- Lace, M. V. (Massage and Medical Gymnastics, with a foreword by J. Mennell) (rev.) 248
- Laidley, J. W. S., and Cummine—The Empirical Use of Penicillin for a Sulphonamide-Resistant Patient (R) 476
- Lang, W. R.—A Case of Addison's Suprarenal Syndrome of Primary Pituitary Origin (R) 335
- Langdon-Brown, W. 703
- Langley, Francis Ernest, Death of 490
- Latham, Mr. Justice, Chief Justice 254
- Law, T. Boyd—Penicillin in Pre-Operative and Post-Operative Ophthalmic Surgery (R) 442
- Lawrence, J. H. 483
- Lawson, R. S.—Report of a Case of Amicrobic Pyuria (R) 550
- Leading Articles—
  - Australia and Science: The University of Sydney and Scientists 249
  - Cerebral Trauma and its Mechanisms 885
  - Clinical Discipline 409
  - Dietary Deficiencies and Oral Structures 85
  - Discussions on Health Legislation in the United States of America 301
  - Eyes 705
  - Federal Medical War Relief Fund, The 229
  - Food Consumption in Australia 21
  - Heavy Blow, A, to Medical Research 631
  - Institute, An, of Medical Research for Queensland 157
  - Intervertebral Disk, The 53
  - Journal, The, and the Recent Industrial Unrest 117
  - Meeting, The, of the Federal Council 553
  - National Health Service Bill of Great Britain, The 517
  - Overseas Travel for Australian Students 191
  - "Paludrine" 229
  - Parenteral Use of Vitamins, The 667
  - Peace and the Individual 481
  - Report, A—
    - From Great Britain on a Comprehensive Dental Service 593
    - On the Remuneration of General Practitioners 809
  - Research in Medical History 445
  - Retirement, The, of Surgeon Captain W. J. Carr 117
  - Special Representative Meeting in London, The 741
  - Staffing of Hospitals, The: A Statement from England 777
  - "Story, The, of a Great Achievement" 337
  - Treatment, The, of Rheumatism by Dehydration 373
  - Women in Medicine 849
  - World Food Shortage, The 921
- Lead Poisoning 124, 816
- Leakage after Intestinal Anastomosis, The Prevention of (C.C.) 887
- Lee, A. E.—
  - Case, A, of Intractable Constipation 165
  - Low Backache (O) 42
- Lee, D. H. K. 157
- Lee, R. I. 302
- Legacy Club, The, by E. P. Blashki 63
- Legislation and Hygiene, Outlines of Industrial Medicine, by J. Burnet (rev.) 20
- Leichtentritt, B. 670
- Lemerle, T. H. 234
- Lemmon, W. M. 197
- Leprosy—
  - Human, Observations on: Infection of Rats with Human Excretal Organisms, by J. W. Fielding (O) 578
  - Rat, Further Observations on, by J. W. Fielding (O) 681
  - Report, A, of Nine Cases among Natives of the Mount Hagen Area in New Guinea, by N. Shlimovitz (R) 369
- Leslie, D. R.—
  - Case, A, of Gunshot Wound of the Large and Small Intestines (R) 406
  - Report of a Fatal Case of "Blast" Injury of the Spinal Cord (R) 188
- L'Estrange, Guy Stuart, Death of 204
- Leucotomy, Prefrontal, The Results of (C.C.) 118
- Lewis, F. T. 86, 87
- Lewis, N. D. C. 919
- Lewisham Hospital, Sydney 26
- Ley, Dr. Robert, The Brain of (C.C.) 447
- Limbs, Artificial, Supply of 124
- Lind, P. E., Beveridge and Campbell—Pleuropneumonia-Like Organisms in Cases of Non-Gonococcal Urethritis in Man and in Normal Female Genitalia (O) 179
- Linen for Doctors' Surgeries 123
- Lipomata of the Uterus, with Report of a Case, by J. D. Hicks (O) 184
- Liquid Fuel Supplies 123
- Liquor Reform Society 124
- Little, A. G., junior 303
- Little, N. 58, 59
  - And Hudson—Chondritis of the Patella (O) 398
  - Some Further Observations on Sciatica (O) 33
- Liver, Rupture of the, in the New-Born: Recovery after Blood Transfusion and Laparotomy, by F. Arden (R) 187
- Loewenthal, L. S.—Inguinal Hernia and its Repair 381
- London Letter 603
- Long, J. C. 23
- Lowsley, O. S. (The 1945 Year Book of Urology) (rev.) 776
- Lowther, F. de L. 849
- Luckiesh, M. 375
- Ludwig's Angina, A Case of, by V. Bulteau (R) 514
- Lull, C. B., and Hingston (Control of Pain in Childbirth, with an introduction by N. W. Vaux) (rev.) 408
- Lung, Diseases of the, The Correlation of Physical and X-Ray Findings in: Chest Examination, by R. R. Trail, with a foreword by W. L. Langdon-Brown (rev.) 703
- Lung Abscess, Putrid, by C. J. Officer Brown (O) 107
- Lymphangioendothelioma, Abdominal, or Peritoneal Mesothelioma, A Case of, by I. Hamilton and J. B. Cleland (R) 477
- Lyons, A.—Trigeminal Neuralgia 750
- Lyons, R. 631
- Lyttleton, O, The Right Honourable 337

M

- MacCallum, P. 92
- Mace, L. M. 483
- Macindoe, N. M. 674
- Mackerras, I. M., and West—"DDT" Poisoning in Man (R) 400
- Mackerras, M. J. 234
- Mackie, M. A. 533
- MacLaurin, C. 340
- Macnamara, J. 640, 641, 712
- Macpherson, M. 374
- Macy, I. G. (Nutrition and Chemical Growth in Childhood, with a foreword by L. Reynolds and a supplement by J. O. Holmes) (rev.) 884
- Magee, C. G. 23
- Malaria—
  - By K. Byrne 930
  - By M. R. Finlayson and J. McF. Rossell 784
  - Unusual Case of, An—
    - By N. Cunningham 453
    - By R. F. Matthews 380
- Malaria Control, New Conceptions of, by C. E. M. Gunther (O) 510
- Malaya and Thailand, Observations by a Pathologist during Three and a Half Years as a Prisoner of War in, by A. T. H. Marsden (O) 766
- Malosetti, H. E. 159
- Mantoux Test, The—The Tuberculin Patch Test: A Comparison with the, by Catherine Hudson and F. E. Hytten (O) 475
- Maori, Blood Groups in the, by J. J. Graydon and R. T. Simmons (O) 135
- Marat, Jean-Paul: Visionary or Villain? (C.C.) 340
- Marble, H. C. 54
- Marks, A. 816
- Marley, H. W. H. 157

Page
Marrack, J. R., Panton and May (Clinical Pathology) (rev.) 848

Marsden, A. T. H.—
  Detection, The, of the Cysts of Entamœba Histolytica in the Fæces by Microscopic Examination (O) 915
  Observations by a Pathologist during Three and a Half Years as a Prisoner of War in Malaya and Thailand (O) 766

Marsden, J. A.—
  Penicillin Therapy for Tendon Sheath Infections of the Hand (O) 435
  Report on a Case of Burns Complicated by Hæmatemesis and Melena (R) 551
Marshall, C. E.—Chronic Vesiculitis as a Factor in the Production of Non-Gonococcal Urethral Discharges (O) 846
Marshall, S. V.—Spinal Anæsthesia and Chloroform: A Comparison of Mortality 750
Marvin 87
Masculinization, A Contribution to the Problem of, by H. F. Bettinger and H. Jacobs (O) .. 10
Massage and Medical Gymnastics, by M. V. Lace, with a foreword by J. Mennell (rev.) 248
Massler, M. 85
Masten, M. G. 919
Matthews, R. F.—An Unusual Case of Malaria 380
Matzke 87
Maun, M. E. 670
Maxwell, J. (Introduction to Diseases of the Chest) (rev.) 228
May, H. B., Panton and Marrack (Clinical Pathology) (rev.) .. 848
Mayock, R. L. 594
Mayer-Gross, W. 118

Mayes, B. T.—
  Obstetric Bulletins 275
  Placenta Prævia 715
"M.B., B.S."—Ulcers in the Mouth: An Appeal for Help 274
McArthur, G. A. D.—Some Notes on West's Operation (Endonasal Dacryocystostomy) (O) 508
McCance, R. A. 303
McCarthy, C. M. 926, 927
  Rehabilitation, The, of War Neurotics (O) 910
McCulloch, R. N.—Studies in the Control of Scrub Typhus (O) .. 717
McCutcheon, A. 129
McDonald, C. G. 674
McDonald, Edward, Death of 96
McKellar, C. C.—Honorary Medical Staffs 894
McKillop, W. J. 203
McLachlan, A. E. W. (Handbook of Diagnosis and Treatment of Venereal Disease) (rev.) 336
McLaren, C. I.—A Psychiatric Programme for Peace 677
McLaren, W. W. 450, 451
McLean, George, Death of 240
McLean, J. 711
McLorinan, H. 93, 638, 641
  Report, A, on Sixteen Cases of Supraglottic Œdema (O) 220
McMahon, F. F.—Ulcers in the Mouth: An Appeal for Help .. 715
McTiernan, Mr. Justice 271
McVilly, C. L.—The Central Hospital, Melbourne 203
Means, J. H. 779
Medical Annual, The (C.C.) 341
Medical Appointments 96, 204, 276, 348, 384, 420, 456, 492, 536, 572, 608, 644, 680, 716, 752, 788, 860, 896, 932
  Important Notice . 32, 64, 96, 132, 168, 204, 240, 276, 312, 348, 384, 420, 456, 492, 536, 572, 608, 644, 680, 716, 752, 788, 824, 860, 896, 932
Medical Benefits Fund of New South Wales 601
Medical Conference, An International (C.C.) 633
Medical Curriculum, Anatomy in the, by A. A. Abbie (O) 152
Medical Defence Society of Queensland 816
Medical Education and Medical Practice in Germany during the War (C.C.) 923
Medical Finance Limited 602
Medical History, Research in (Leading Article) 445
Medical Officers, Certain Service, The Training Prior to Discharge of 30, 240
Medical Practice—
  Dangerous Drugs Regulations of Victoria 382
  Future of, The, by C. H. Jaede .. 823
  In Tasmania, The Changing Face of, An Address, by G. M. W. Clemons (O) 609
  Medical Practitioners and Evidence at Inquests 345
  Police Offences (Amendment) Act of New South Wales 383
  Supply, The, of Motor-Cars 95
Medical Prizes—The Stawell Prize .. 751
Medical Profession, Politics and the—
  An Address, by J. Dale (O) 65
  By A. Barber 416
  By P. G. Dane 417, 784
  By E. P. Dark 534, 929
  By G. O'Day 273
  By N. Pern 416, 677
Medical Sciences Club of South Australia 817
Medical Societies—
  Medical Defence Society of Queensland 816
  Medical Sciences Club of South Australia 817
  Medico-Legal Society of Victoria, The 273
  Melbourne Pædiatric Society .. 27, 59, 92, 129, 162, 450, 486, 636, 675, 710, 890, 928
  Obstetrical Society of the Women's Hospital, Melbourne 196, 530
  Public Medical Officers' Association of New South Wales, The 414
Medical Staffs, Honorary, by C. C. McKellar 894
Medical Students, The Selection of, in Relation to the Needs of a Community and the Facilities Available for Instruction, by Lambert Rogers 162
Medical Training, The Adequacy of—
  By K. J. B. Davis 275
  By B. Williams (O) 147
Medicine—
  For Nurses, by W. G. Sears (rev.) 20
  General, The 1945 Year Book of, edited by G. F. Dick *et alii* (rev.) 920
  History of, A, by D. Guthrie (rev.) 443
  Industrial, Legislation and Hygiene, Outlines of, by J. Burnet (rev.) 20
  Outlines of Physical Methods in, by G. D. Kersley (rev.) 336
  Psychological, A Short Introduction to Psychiatry, with an Appendix on Psychiatry Associated with War Conditions, by D. Curran and E. Guttmann, with a foreword by J. J. Conybeare (rev.) 776
  Social, The Basic Wage, Shortage of Nurses and—
    By M. C. DeGaris 785
    By E. S. Meyers (O) 548
  Textbook of, by Various Authors, edited by J. J. Conybeare (rev.) 408
  Women in (Leading Article) 849
Medico-Legal—Hocking *versus* Bell 254
Medico-Legal Society of Victoria, The 273
Mechan, A. V.—
  Address, An (O) 133
  Low Back Pain (O) 40
Melbourne Pædiatric Society .. 27, 59, 92, 129, 162, 450, 486, 636, 675, 710, 890, 928
Melbourne Permanent Post-Graduate Committee (*see* Post-Graduate Work)
Mello-Leitao, C. 811
Melnick, D. 410, 411
Memorial, A, to the Late Professor James Thomas Wilson 348
Men, Normal Young, A Study of: What People Are, by C. W. Heath (rev.) 444
Meningitis—
  And Ventriculitis, Staphylococcal: Cure by Penicillin, by D. Miller and H. J. Delohery (R) 512
  Hæmophilus Influenzæ, The Treatment of, with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum, by E. A. North, H. Wilson and G. Anderson (O) 215
  Purulent, of Infancy and Childhood: A Twelve Months' Survey of the Results of Treatment by Penicillin, by E. K. Turner (O) 14
Mennell, J. 248
Mennell, J. B. (Physical Treatment by Movement, Manipulation and Massage) (rev.) 444
Meschan, I.—A Radiographic Analysis for Spondylolisthesis (O) 465
Mesothelioma, Peritoneal, Abdominal Lymphangioendothelioma or, A Case of, by I. Hamilton and J. B. Cleland (R) 477
Meyers, E. S.—
  Basic Wage, The, Shortage of Nurses and Social Medicine (O) 548
  Organization of a Profession 784
  Surgical and Applied Anatomy, The, of the Inguinal Region 237
Michaelis, L. S. (Anatomical Atlas of Orthopædic Operations) (rev.) 848
Milk of Melbourne Women, Ascorbic Acid in the, by D. Winikoff (O) 205
Milk Supply, Bacteria in Relation to the: A Practical Guide for the Commercial Bacteriologist, by C. H. Chalmers (rev.) 479
Miller, D. 58
  And Delohery — Staphylococcal Meningitis and Ventriculitis: Cure by Penicillin (R) 512
  Intervertebral Disk, The 346
  Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease 274
Miller, J. B. 746
Millin, T. 230
Minor, G. R. 555
Minot, G. R. 743, 920
Mitchell, P. C. 84
Mitral Stenosis, Early 814
Molesworth, E. H. 415
  (An Introduction to Dermatology, with a Chapter on the Theory and Technique of X-Ray and Radium Therapy, with a Foreword to the First Edition by J. Jadassohn) (rev.) 227
  Late Herbert Michael Moran, The 311
Mollison, Dr. C. H., Retirement of, from the Office of Honorary Treasurer 92
Moncrieff, A. 479
Money, R. A. 58, 59, 707
  Sciatica (O) 37
Monk, I.—Amicrobic Pyuria 785
Montevideo Faculty of Medicine, Annals of the (C.C.) 158
Moore, D. R.—Australia and Science: The University of Sydney and Scientists 418
Moore, F. D. 779, 851
Moore, J. N. P. 118
Moran, Herbert Michael—
  Death of 415, 535
  The Late, by E. H. Molesworth .. 311
Morris, J. G.—The Treatment of Scabies 380
Morris, J. Newman—Medical Aspects of Red Cross in the Second World War—The Sir Richard Stawell Oration (O) 169
Morrison, G. 533
Morrow, A. W.—A Disclaimer 678
Morton, C. R.—The Botany of Toowoomba and Environs and its Relation to Clinical Allergy of the Upper Respiratory Tract (O) 585
Moschowitz, E. 193
Motor-Cars, The Supply of 95
Motor-Car Tires and Accessories 123
Moulds in the Lungs, by J. B. Cleland (R) 247
Mouth, Lesions of the, and Iron Deficiency (C.C.) 850
Muecke, Roy LePage, Death of 311
Murmurs from Turbulent Flow (C.C.) 339
Murphy, A. 157
  Sudden Death following Initial Injection of a Mercurial Diuretic (R) 589
Murphy, E.—Low Backache (O) ... 44
Murphy, E. M.—Ulcers in the Mouth: An Appeal for Help 534
Murphy, J. A. R.—Bacille Calmette Guérin 930
Murray, N. E., and Reid—Experimental Observations on the Aural Effects of Gunblast (O) . 611
Murray, Senator 302
Muscular Atrophy, Peroneal 379

N

Nathanson, I. T. 707
National Health and Medical Research Council, The 561

Page
National Health Service Bill of Great Britain, The 524, 746
    By S. Siedlecky 893
    (Leading Article) 517
Naval Medical Services, The Australian 566
Naval, Military and Air Force—
  Appointments ... 31, 132, 166, 203, 275, 311, 347, 453, 605, 643, 675, 712, 747, 782, 818, 857, 891
  Casualties 31, 64, 168, 419, 491, 606, 782, 891
  Decorations 380, 419, 571
  Training, The, Prior to Discharge of Certain Service Medical Officers 30, 240
Neil, J. Hardie 670
Nelson, T. Y. 707
Nephritis, Acute, Modern Treatment in (C.C.) 742
Nervous Diseases, The Diagnosis of, by J. Purves-Stewart (rev.) .. 739

Nervous System—
  Central, Early Diagnosis in Tumours of the, by W. Lister Reid (O) 865
  Diseases of the, by F. M. R. Walshe (rev.) 52

Neuralgia, Trigeminal—
  By F. J. Clark 895
  By A. Lyons 750

Neurology—
  And Neuropsychiatry, Recent Advances in, by W. R. Brain and E. B. Strauss (rev.) 371
  Psychiatry and Endocrinology, The 1945 Year Book of, edited by H. H. Reese *et alii* (rev.) .. 919
Neuropathology, Textbook of, by A. Weil (rev.) 299
Neuro-Psychiatry, Aviation, by R. N. Ironside and I. R. C. Batchelor (rev.) 480
Neuroses, War, by R. R. Grinker and J. P. Spiegel (rev.) 630
Neurosurgical Patient, The: His Problems of Diagnosis and Care, by C. W. Rand (rev.) 247
Neurosyphilis 306
  Tabetic Form with Optic Atrophy 306
  Tabo-Paretic Type 307
Neurotics, War, The Rehabilitation of 926
    By C. M. McCarthy (O) 910
    By H. H. Willis (O) 912
Newcastle Disease of Fowls, Virus of, A Note on Two Laboratory Infections with the, by S. G. Anderson (R) 371

New Guinea—
  Enteric Fever due to Bacterium Enteritidis var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from, by F. Fenner and A. V. Jackson (O) 313
  Leprosy: A Report of Nine Cases among Natives of the Mount Hagen Area in, by N. Shlimovitz (R) 369
  Salmonella Blegdam Causing Infections in Humans in, Preliminary Report on Strains of, by N. Atkinson (O) 326
Newland, H. 558

Newson, A., and Rose—
  Compound Fractures of the Extremities due to Gunshot Wounds: The Early Results of Treatment in the Field Aided by Penicillin Therapy (O) 330
  Early Results of the Treatment of Gunshot Wounds of Limb Joints Aided by Penicillin Therapy (O) 75
  Suture of Deep Soft Tissue War Wounds Aided by Penicillin Therapy (O) 364
  Treatment of Gunshot Wounds of the Chest in the Field Aided by Penicillin Therapy (O) 290
  And Watson—Early Results in a Short Series of Cases of Gunshot Wounds of the Abdomen (O) 180
Newton, A. 570
New Zealand Letter 344, 676
Nicholls, L. (Tropical Nutrition and Dietetics) (rev.) 516
Nicola, T. (Atlas of Surgical Approaches to Bones and Joints) (rev.) 808

Page
Nicotinic Acid, Studies in, by R. W. Hawker (O) 872
Nightingale, H. J. 671
Nimmo, J. R.—Epidemic Polyarthritis 380
Nissen, R. (Duodenal and Jejunal Peptic Ulcer: Technic of Resection, with a Foreword by O. H. Wangensteen) (rev.) 189
Noble, R. A. 31
Nominations and Elections 32, 64, 168, 203, 240, 311, 347, 383, 420, 455, 492, 536, 571, 607, 644, 679, 716, 751, 787, 824, 859, 895, 931

North, E. A.—
  And Christie—Acquired Resistance of Staphylococci to the Action of Penicillin (O) 176
  Wilson and Anderson—
    Resistance, The, of Hæmophilus Influenzæ to the Action of Penicillin, with Special Reference to Type B Strains (O) 626
    Treatment, The, of Hæmophilus Influenzæ Meningitis with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum (O) 215
Northern Territory, A Sociological Study of the Aborigines in the, and their Eye Diseases, by M. Schneider (O) 99
Notes on Books, Current Journals and New Appliances—
  Artificial Respiration Explained, by F. C. Eve 516
  Commodore, The, by C. S. Forester 116
  Green Armour, by O. White 516
  Hospital Color and Decoration, by R. P. Sloan 190
  Pacific Parade, by F. Clune 704
  Talk 552
Notice 204, 456, 572, 747, 752, 788, 896
  Special Representative Meeting in May 536
Nuffield Medical Endowment 895

Nurses—
  Demonstrations of Operative Surgery for, by H. Bailey (rev.) .. 516
  Medicine for, by W. G. Sears (rev.) 20
  Shortage of, and Social Medicine, The Basic Wage—
    By M. C. DeGaris 785
    By E. S. Meyers (O) 548

Nursing—
  In Acute Infectious Disease, by F. V. G. Scholes (rev.) 300
  Industrial: Its Aims and Practice, by A. B. Dowson-Weisskopf, with a foreword by E. Summerskill (rev.) 84
  Obstetric Management and, by H. L. Woodward, B. Gardner *et alii* (rev.) 703
  Pediatric, Principles of Pediatrics and, by C. M. Knox (rev.) 703
Nursing Procedures, Modern Practical, by M. K. Doherty, M. B. Sirl and O. I. Ring (rev.) 630

Nutrition—
  And Chemical Growth in Childhood, by I. G. Macy, with a foreword by L. Reynolds and a supplement by J. O. Holmes (rev.) 884
  And Dietetics, Tropical, by L. Nicholls (rev.) 516
  Post-War Plans for, in Canada .. 93
Nutt, A. L. 707
Nye, L. J. J.—The Saliva Factor in Peptic Ulceration (O) 114

O

Obituary—
  Allan, George 453
  Anderson, George Murray .. 608, 786
  Aspinall, Andrew Eric, and Archibald John 238
  Bowker, Cedric Victor 823
  Bray, George William 489
  Bruce, James Whitson Kemp 132
  Buchanan, George Arthur 716
  Campbell, Alice Pritchard 311
  Clayton, George Edward Burdekin 716
  Cosh, John Inglis Clark 311
  Crooke, Robert Warren 895
  Davies, Harold Whitridge 859
  Frayne, Ernest John 895
  Fullerton, Alexander Young 490
  Graham, Walter Robert 32
  Hardie, David 95
  Hay, Arthur 96

Page
Obituary—*Continued.*
  Hirschfeld, Eugen 931
  Langley, Francis Ernest 490
  L'Estrange, Guy Stuart 204
  McDonald, Edward 96
  McLean, George 240
  Moran, Herbert Michael 415, 535
  Muecke, Roy LePage 311
  Pigdon, Douglas Clelland 451
  Pólya, Eugene 823
  Retallack, Cyrus Bath 859
  Rogerson, Edward 752
  Rosebery, Sidney Solomon 204
  Smith, Redford John Wright 716
  Sutcliffe, Ernest Weston 859
  Tennent, Joseph Thom 536, 823
  Van Someren, George Arbuthnot .. 716
  Vickers, Wilfred 384
  Wilkinson, William Camac .. 204, 488
  Wilson, James Thomas 31
  Wright-Smith, Redford John 931
O'Brien, J. P.—On the Prickly Heat 164
Obstetrical Society of the Women's Hospital, Melbourne 196, 530
Obstetric Bulletins, by B. T. Mayes 275
Obstetric Management and Nursing, by H. L. Woodward, B. Gardner *et alii* (rev.) 703
Obstetric Service, A Complete (C.C.) 554

Obstetrics—
  And Gynæcology—
    Recent Advances in, by A. W. Bourne and L. H. Williams (rev.) 299
    Synopsis of, by A. W. Bourne (rev.) 666
  And Gynecology, The 1945 Year Book of, edited by J. P. Greenhill (rev.) 884

Obstruction—
  Intestinal, Acute, The Treatment of, by J. T. Chesterman (rev.) 156
  Pyloric, without Tumour 59
Occipito-Posterior Positions, Some Points in the Ætiology and Mechanism of 531
Occipito-Posterior Presentation, The Management of the 532
Occiput, Posterior Position of the .. 530
  Points in Statistics and Ætiology . 530
Ocular Syndrome, An 674
O'Day, G.—Politics and the Medical Profession 273
Œdema (*see also* Edema)—
  Supraglottic, A Report on Sixteen Cases of, by H. McLorinan (O) 220
Œsophagus, Congenital Stricture of the, by R. Flynn (R) 702
Œstrogen Reaction, Unusual, in a Boy (C.C.) 595
Ohler, W. R. 23
Oldham, J.—Spinal Analgesia (O) .. 432
Ophthalmic Practitioners, The Shortage of 569
Ophthalmic Surgery, Penicillin in Pre-Operative and Post-Operative, by T. Boyd Law (R) ... 442
Ophthalmological Society of Australia (British Medical Association) 747
Oppenheim's Disease, Amyotonia Congenita 854
Opticians and Optometrists, The Teaching of, in any Branch of Ophthalmology 567
Oral Structures, Dietary Deficiencies and (Leading Article) 85
Organization of a Profession, by E. S. Meyers 784
Orthopædic Operations, Anatomical Atlas of, by L. S. Michaelis (rev.) 848
Oser, B. L. 410, 411
Osseous System, The: A Handbook of Roentgen Diagnosis, by V. W. Archer (rev.) 666

Osteomyelitis—
  Chronic, The Digestion of Dogs and, by "Curious" 275
  Of the Acetabulum 854
  Short Note, A, on the Changing Outlook in, brought about by the Introduction of Penicillin, by R. D. McKellar Hall (R) 401

P

Pacific Parade, by F. Clune (note) 704
Page 810
Page, I. H., and Corcoran (Arterial Hypertension: Its Diagnosis and Treatment) (rev.) 83

Page

- Pain, A. A.—
  - Functional Disorders 131
  - Psychotherapy 859
- Pain—
  - Control of, in Childbirth, by C. B. Lull and R. A. Hingston, with an introduction by N. W. Vaux (rev.) 408
  - In the Right Iliac Fossa, Two Causes of (C.C.) 303
- "Paludrine"—
  - (Leading Article) 229
  - (M.4888) in Australia, Researches on 234
- Pancreas—
  - Congenital Fibrocystic Disease of the—
    - By P. E. Blaubaum (O) 833
    - By L. Dods 929
  - Division of the, An Experimental Study on Pancreatic Secretion and (C.C.) 483
- Panton, P. N., Marrack and May (Clinical Pathology) (rev.) 848
- Papataci Fever, The Clinical Picture of, especially in Palestine, by A. Sandler (O) 789
- Papuans, Further Observations on the Rh and Hr Factors, and the Blood Group Frequencies in, by R. T. Simmons, J. J. Graydon and E. F. Woods (O) 537
- Paralysis—
  - Sleep (C.C.) 811
  - Tick (C.C.) 339
- Parr, L. J. A., and Shipton—Spondylitis Ankylopoietica (O) 277
- Parsons, L. G. 20
- Patella, Chondritis of the, by N. Little and C. Hudson (O) 398
- Pathological Exhibits 163
- Pathological Services for New South Wales, Comprehensive 601
- Pathology—
  - Clinical, by P. N. Panton, J. R. Marrack and H. B. May (rev.) 848
  - Surgical, A Text-Book of, by C. F. W. Illingworth and B. M. Dick (rev.) 336
- Paul, N.—"Atebrin" and Dermatitis: An Inquiry 715
- Paykoc, Z. V. 743
- Peace—
  - And the Individual (Leading Article) 481
  - Psychiatric Programme for, A—
    - By R. S. Ellery (O) 457
    - By C. I. McLaren 677
- Peacock, W. 779
- Pediatric X-Ray Diagnosis: A Text-book for Students and Practitioners of Pediatrics, Surgery and Radiology, by J. Caffey (rev.) 807
- Pediatrics—
  - Principles of, and Pediatric Nursing, by C. M. Knox (rev.) 703
  - Year Book of, The 1945, edited by I. A. Abt, with the collaboration of A. F. Abt (rev.) 884
- Penicillin—
  - Acquired Resistance of Staphylococci to the Action of, by E. A. North and R. Christie (O) 176
  - And the Skin (C.C.) 411
  - Empirical Use of, The, for a Sulphonamide-Resistant Patient, by H. G. Cummine and J. W. S. Laidley (R) 476
  - In Pre-Operative and Post-Operative Ophthalmic Surgery, by T. Boyd Law (R) 442
  - In the Laboratory Diagnosis of Whooping-Cough, A Note on the Use of, by P. M. Anderson (O) 244
  - Purulent Meningitis of Infancy and Childhood: A Twelve Months' Survey of the Results of Treatment by, by E. K. Turner (O) 14
  - Resistance, The, of Hæmophilus Influenzæ to the Action of Penicillin, with Special Reference to Type B Strains, by E. A. North, H. Wilson and G. Anderson (O) 626
  - Septic Thrombosis of the Cavernous Sinus Treated with Penicillin 674
  - Short Note, A, on the Changing Outlook in Osteomyelitis brought about by the Introduction of, by R. D. McKellar Hall (R) 401
- Penicillin—*Continued.*
  - Staphylococcal Meningitis and Ventriculitis: Cure by, by D. Miller and H. J. Delohery (R) 512
  - Tetanus Treated with: Recovery, by J. L. Grove (R) 226
- Penicillin Sensitivity of Streptococci Mostly of Groups A, B, C and G, by R. T. Simmons and R. Christie (O) 349
- Penicillin Therapy—
  - Compound Fractures of the Extremities due to Gunshot Wounds: The Early Results of Treatment in the Field Aided by, by T. F. Rose and A. Newson (O) 330
  - Early Results of the Treatment of Gunshot Wounds of Limb Joints Aided by, by T. F. Rose and A. Newson (O) 75
  - For Tendon Sheath Infections of the Hand, by J. A. Marsden (O) 435
  - In the Treatment of Gonorrhœa, The Results of, by S. Siedlecky (O) 904
  - Suture of Deep Soft Tissues War Wounds Aided by, by T. F. Rose and A. Newson (O) 364
  - Treatment of Gunshot Wounds of the Chest in the Field by, by P. Braithwaite 418
  - Treatment of Gunshot Wounds of the Chest in the Field Aided by, by T. F. Rose and A. Newson (O) 290
- Penington, A. H.—Tuberculosis Patients and Hospitals 237
- Pepper, O. H. Perry 887
- Periarteritis (Polyarteritis) Nodosa, A Case of, by J. Game (R) 295
- Pericarditis—
  - Amœbic (C.C.) 159
  - Suppurative, with Recovery, Report of a Case of Salmonella Blegdam Septicæmia and, by J. F. C. C. Cobley and T. E. Wilson (R) 439
- Perineal Repair, Episiotomy and 200
- Pern, N.—Politics and the Medical Profession 416, 677
- Personality Factors in Counseling, by C. A. Curran, preface by M. J. Ready, introduction by C. R. Rogers (rev.) 807
- Pett, L. B. 93
- Pharmaceutical Benefits Act, 1944, The 91, 126, 562, 601
  - By L. R. Jury 893
- Photographs, Clinical 378
- Physical Methods in Medicine, Outlines of, by G. D. Kersley (rev.) 336
- Physical Treatment by Movement, Manipulation and Massage, by J. B. Mennell (rev.) 444
- Physiology, Human, Principles of, by C. Lovatt Evans; with section of the special senses by H. Hartridge (rev.) 704
- Pickering, E. W. 632
- Pigdon, Douglas Clelland, Death of 451
- Pink Disease 816
- Pitt, D. B.—Tuberculous Patients and Hospitals 30
- Placebo, The (C.C.) 887
- Placenta Prævia—
  - By H. C. Callagher 571
  - By B. T. Mayes 715
  - By J. N. R. Stephen 490, 894
  - By R. H. Syred (O) 357
- Plant, A. 193
- Plasma Protein Estimations in Battle Casualties, by T. E. Wilson (O) 153
- Pleuropneumonia-Like Organisms in Cases of Non-Gonococcal Urethritis in Man and in Normal Female Genitalia, by W. I. B. Beveridge, A. D. Campbell and P. E. Lind (O) 179
- Pneumothorax, Artificial, Pulmonary Tuberculosis Treated by 378
- Poate, H. R. G. 779
  - And Spencer—"Thio" Drugs in Thyreotoxicosis 750
  - (O) 493
- Pockley, E.—"Beach Foot" 346
- Poisoning—
  - D.D.T., in Man, by I. M. Mackerras and R. F. K. West (R) 400
  - Lead 124, 816
- Police Offences (Amendment) Act of New South Wales 383
- Poliomyelitis 636
  - Acute Anterior 124
  - Epidemic of, An, Occurring among Troops in the Middle East, by J. E. Caughey and W. M. Porteous (O) 5
  - Paralysis, Mild, Early Detection of 640
  - Question of Diagnosis, A, by D. A. Brown 822
  - Virus of, The 638
- Politics and the Medical Profession—
  - Address, An, by J. Dale (O) 65
  - By A. Barber 416
  - By P. G. Dane 417, 784
  - By E. P. Dark 534, 929
  - By G. O'Day 273
  - By N. Pern 416, 677
- Pollock, D. J., Corkill and Smith—The Value of Biochemical Tests in the Interpretation of Jaundice (O) 617
- Pólya, Eugene, Death of 823
- Polyarteritis—Periarteritis Nodosa, A Case of, by J. Game (R) 295
- Polyarthritis, Epidemic—
  - By P. G. Dowling (O) 245
  - By J. R. Nimmo 380
- Pontine Degeneration, Progressive 309
- Pope, A. 707
- Pope, K. S. 234
- Porphyria—
  - Acute, with Reports of Two Fatal Cases, by E. H. Derrick (O) 241
  - (C.C.) 250
- Porteus, S. D. 118
- Porteous, W. M., and Caughey—An Epidemic of Poliomyelitis Occurring among Troops in the Middle East (O) 5
- Post-Graduate Facilities in the United States 567
- Post-Graduate Medical Education Committee of the University of Queensland (*see* Post-Graduate Work)
- Post-Graduate Work—
  - Melbourne Permanent Post-Graduate Committee 92
    - Course at Geelong 535
    - Course on Anæsthesia in Melbourne 535
    - Courses at Melbourne during 1946 for Medical Graduates 62
    - Course at the Women's Hospital 751
    - Programme for March 203
    - Programme for April 383
    - Programme for June 643
    - Programme for July 821
    - Refresher Course for General Practitioners in Melbourne 714
  - New South Wales Post-Graduate Committee in Medicine 203
    - Annual General Course in Sydney: Programme for April 455
    - Course at Armidale 751
    - Course in Advanced Medicine at Sydney 787
    - Course in Clinical Pathology at Sydney 895
    - Course in Gynæcology and Obstetrics at Sydney 821
    - Courses in Sydney 311
    - Film Afternoon at Sydney 348, 679, 859
    - Film Programme at Sydney 535
    - Lectures at Sydney 859
    - Programme of Courses in Sydney for 1946 607
  - Overseas Travelling Fellowships 383
  - Post-Graduate Committee in Medicine of the University of Adelaide—
    - Course on Heart Disease at Adelaide 679
  - Post-Graduate Study in England 63
  - University of Queensland Post-Graduate Medical Education Committee—
    - Courses in Obstetrics and Gynæcology at Brisbane 931
    - Courses in Queensland in 1946 131
    - General Revision Course at Brisbane 273
    - Lectures in the Principles of Pathology 273
    - Post-Graduate Week in Brisbane 643, 678
- Poverty, Housing and Health—
  - By J. Brown 29
  - By A. Bulteau 29

Page

- Powell, M. L. 928
- Power, M. H. 303
- Practitioners—
  - General, Remuneration of, A Report on the (Leading Article) 809
  - Medical, and Evidence at Inquests 345
- Pratt, C. A. (The Essentials of Chiropody) (rev.) 408
- Pratt, R. V.—A Trocar and Cannula for the Intravenous Administration of Fluids (O) 629
- Pratt-Thomas, H. R. 483
- Precocity, Adrenal Carcinoma Causing 60
- Pregnancy, Infectious Diseases during, with Special Reference to Rubella, Congenital Abnormalities in Infants following: A Third Series of Cases, by C. Swan and A. L. Tostevin (O) 645
- Premature Baby, The, by V. M. Crosse, with a foreword by L. G. Parsons (rev.) 20
- Prescott, F., and Bicknell (The Vitamins in Medicine) (rev.) 552
- Price, E. 636, 641
- Prickly Heat, On the—
  - By J. P. O'Brien 164
  - By C. White 382
- Priestly, F. R. 345
- Prisoner of War—
  - In Japan, Experiences as a, by S. E. L. Stening (O) 773
  - In Malaya and Thailand, Observations by a Pathologist during Three and a Half Years as a, by A. T. H. Marsden (O) 766
  - Some Medical Experiences as a, by N. H. Rose (O) 772
  - Surgical Experiences as a, by K. J. Fagan (O) 775
- Prisoner of War Hospitals in the Far East—
  - Clinical Lessons from (Burma and Siam), by A. E. Coates (O) 753
  - By E. E. Dunlop (O) 761
- Proprietary Medicines Investigation Committee 565
- Prostatectomy, Retropubic and Extravesical (C.C.) 230
- Pseudoarthrosis, Congenital, of the Tibia due to Fibrocystic Disease 26
- Psychiatric Aspects of Modern Warfare, by R. S. Ellery (rev.) 189
- Psychiatric Programme for Peace, A
  - By R. S. Ellery (O) 457
  - By C. I. McLaren 677
- Psychiatry—
  - And Endocrinology. The 1945 Year Book of Neurology, edited by H. H. Reese *et alii* (rev.) 919
  - Short Introduction to, A, with an Appendix on Psychiatry Associated with War Conditions: Psychological Medicine, by D. Curran and E. Guttmann, with a foreword by J. J. Conybeare (rev.) 776
- Psychology—
  - In General Practice, edited by A. Moncrieff (rev.) 479
  - Of Women, The: A Psychoanalytic Interpretation, by H. Deutsch, with a foreword by S. Cobb (rev.) 300
- Psychosis, Confusional 310
- Psychoses Occurring in Service Personnel in Forward Areas, Observations on—
  - By F. W. Graham 785
  - By H. J. B. Stephens (O) 145
- Psychotherapy, by A. A. Pain 859
- Psychotic Casualties in New Guinea, with Special Reference to the Use of Convulsive Therapy in Forward Areas, by D. Ross (O) 830
- Psychotic Ex-Servicemen, Some Remarks on, by A. T. Edwards (O) 738
- Public Health—
  - Early Diagnosis and Early Treatment, The, of Cancer: A Publicity Campaign 571
  - Future Health Services in Great Britain 487
  - National Health Service Bill of Great Britain, The 524
  - Post-War Plans for Nutrition in Canada 93
- Public Medical Officers' Association of New South Wales, The 414

Page

- Pugh, L. G. C. 373
- Pulmonary Edema and Inflammation: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates, by C. K. Drinker (rev.) 739
- Purves-Stewart, J. (The Diagnosis of Nervous Diseases) (rev.) 739
- Pyrexia, Prolonged 814
- Pyuria, Amicrobic—
  - By I. Monk 785
  - Report of a Case of, by R. S. Lawson (R) 550

Q

- Queensland Health Education Council 124
- Quarantine Officers, The Appointment of 564
- Queensland, An Institute of Medical Research for (Leading Article) 157
- Quotations with a Medical Bearing: Acceptable Words, by J. B. Cleland (O) 876

R

- Radcliffe-Taylor, M. A.—The Intervertebral Disk 237, 454
- Radiology, Year Book of, The 1945; Diagnosis: edited by C. A. Waters; associate editor, W. B. Firor; Therapeutics: edited by I. L. Kaplan (rev.) 666
- Ralston 339
- Ramírez, F. 446
- Rand, C. W. (The Neurosurgical Patient: His Problems of Diagnosis and Care) (rev.) 247
- Rapoport, M. 742
- Rationing 123
- Rawlings, W. J. 533
- Rawson, R. W. 779
- Ready, M. J. 807
- Recto-Vesical Injury, An Unusual (C.C.) 743
- Rectum, Columnar-Celled Carcinoma of the, Treated by Radon: Preliminary Report, Sixteen Months after Treatment, by P. D. Braddon (R) 477
- Red Cross, Medical Aspects of, in the Second World War, The Sir Richard Stawell Oration, by J. Newman Morris (O) 169
- Reese, H. H. 919
- Reestablishment and Reemployment Act, 1945, The 566
- Reflexes, The Examination of: A Simplification, by R. Wartenberg, foreword by F. Kennedy (rev.) 84
- Refugee Medical Practitioners from Europe 558
- Registration, Medical 561
- Rehabilitation—
  - Medical: Its Organization in the Royal Air Force and the Royal Australian Air Force, by G. G. Burniston (O) 620
  - Of Medical Officers of the Armed Forces 568, 600
  - Of Members of the Armed Services 123
  - Of War Neurotics 926
    - By C. M. McCarthy 910
    - By H. H. Willis 912
- Reid, G., and Murray—Experimental Observations on the Aural Effects of Gunblast (O) 611
- Reid, J. S. C. 742
- Reid, W. Lister—Early Diagnosis in Tumours of the Central Nervous System (O) 865
- Release, The, of Medical Officers from the Services 570
- Remuneration of General Practitioners, A Report on the (Leading Article) 809
- Renal Failure and Anoxia, by J. Walker Tomb 63
- Repatriation Commission 568
  - Medical Benefits for Dependants of Deceased Soldiers 123
- Representative Meeting, The Special, in London (Leading Article) 741
- Research—
  - At Sydney Hospital, by N. Rose 750
  - At the Kanematsu Institute—
    - By A. F. Burrett 782
    - By A. J. Canny 642, 894
    - By J. C. Eccles 641
    - By W. W. Ingram 783
    - By T. H. Vickers 642

Page

- Research—*Continued.*
  - In Medical History (Leading Article) 445
  - Medical—
    - Heavy Blow to, A (Leading Article) 631
    - Institute of, An, for Queensland (Leading Article) 157
- Resident Medical Officers' Salaries 601
- Respiration, Artificial, Explained, by F. C. Eve (note) 516
- Respiratory Activity, Droplet Spray Infection and (C.C.) 447
- Retallack, Cyrus Bath, Death of 859
- Reviews—
  - Acute Injuries of the Head: Their Diagnosis, Treatment, Complications and Sequels, by G. F. Rowbotham 20
  - Anatomical Atlas of Orthopædic Operations, by L. S. Michaelis 848
  - Arterial Hypertension: Its Diagnosis and Treatment, by I. H. Page and A. C. Corcoran 83
  - Atlas of Surgical Approaches to Bones and Joints, by T. Nicola, with a Foreword by N. T. Kirk 808
  - Atomic Energy in the Coming Era, by D. Dietz 629
  - Aviation Neuro-Psychiatry, by R. N. Ironside and I. R. C. Batchelor 480
  - Bacteria in Relation to the Milk Supply: A Practical Guide for The Commercial Bacteriologist, by C. H. Chalmers 479
  - Bacterial Cell, The: In its Relation to Problems of Virulence, Immunity and Chemotherapy, by R. J. Dubos, with an addendum by C. F. Robinow 515
  - Biological Actions of Sex Hormones, by H. Burrows 920
  - Chest Examination: The Correlation of Physical and X-Ray Findings in Diseases of the Lung, by R. R. Trail, with a foreword by W. L. Langdon-Brown 703
  - Clinical Pathology, by P. N. Panton, J. R. Marrack and H. B. May 848
  - Control of Pain in Childbirth, by C. Lull and R. A. Hingston, with an introduction by N. W. Vaux 408
  - Demonstrations of Operative Surgery for Nurses, by H. Bailey 516
  - Diagnosis, The, of Nervous Diseases, by J. Purves-Stewart 739
  - Diseases of the Nervous System, by F. M. R. Walshe 52
  - Duodenal and Jejunal Peptic Ulceration; Technic of Resection, by R. Nissen, with a Foreword by O. H. Wangensteen 189
  - Endocrine Man: A Study in the Surgery of Sex, by L. R. Broster, with a foreword by P. C. Mitchell 84
  - Endocrinology of Woman, by E. C. Hamblen 665
  - Essentials—
    - Of Chiropody, The, by C. A. Pratt 408
    - Of Surgery for Dental Students, by J. C. Ross 372
  - Examination of Reflexes, The: A Simplification, by R. Wartenberg, foreword by F. Kennedy 84
  - Extensile Exposure Applied to Limb Surgery, by A. K. Henry 444
  - Global Epidemiology: A Geography of Disease and Sanitation, by J. S. Simmons, T. F. Whayne, G. W. Anderson, H. M. Horack and collaborators 591
  - Hair and Scalp, The, by A. Savill 408
  - Handbook—
    - For Dissectors, A, by J. C. Boileau-Grant and H. A. Cates 704
    - Of Diagnosis and Treatment of Venereal Disease, by A. E. W. McLachlan 336
  - History of Medicine, A, by D. Guthrie 443
  - Industrial Nursing: Its Aims and Practice, by A. P. Dowson-Weisskopf, with a foreword by E. Summerskill 84
  - Introduction—
    - To Clinical Surgery, An: Surgical Wherefores and Therefores, by C. F. M. Saint 848

Page

Reviews—*Continued.*
  Introduction—*Continued.*
    To Dermatology, An, with a Chapter on the Theory and Technique of X-Ray and Radium Therapy, by E. H. Molesworth, with a foreword to the First Edition by J. Jadassohn 227
    To Diseases of the Chest, by J. Maxwell 228
    To Essential Hypertension, An by R. F. Herndon 740
  Manual, A, of Tuberculosis, Clinical and Administrative, by E. A. Underwood, with an introduction by J. R. Currie 630
  Massage and Medical Gymnastics, by M. V. Lace, with a foreword by J. Mennell 248
  Medical Jurisprudence and Toxicology, by J. Glaister 480
  Medicine for Nurses, by W. G. Sears 20
  Modern Practical Nursing Procedures, by M. K. Doherty, M. B. Sirl and O. I. Ring 630
  Neurosurgical Patient, The: His Problems of Diagnosis and Care, by C. W. Rand 217
  Nursing in Acute Infectious Disease, by F. V. G. Scholes .. 300
  Nutrition and Chemical Growth in Childhood, by I. G. Macy, with a foreword by L. Reynolds and a supplement by J. O. Holmes .. 884
  Obstetric Management and Nursing, by H. L. Woodward and B. Gardner, with a section on home deliveries by W. P. Gillespie and also a section on diseases of the newly born by H. F. Downing 703
  Osseous System, The: A Handbook of Roentgen Diagnosis, by V. W. Archer 666
  Outlines of Industrial Medicine, Legislation and Hygiene, by J. Burnet 20
  Outlines of Physical Methods in Medicine, by G. D. Kersley 336
  Pediatric X-Ray Diagnosis: A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology, by J. Caffey 807
  Personality Factors in Counseling, by C. A. Curran, preface by M. J. Ready, introduction by C. R. Rogers 807
  Physical Treatment by Movement, Manipulation and Massage, by J. B. Mennell 444
  Premature Baby, The, by V. M. Crosse, with a foreword by L. G. Parsons 20
  Principles—
    And Practice, The, of Rectal Surgery, by W. B. Gabriel .. 228
    Of Human Physiology (originally "Starling's Princples of Human Physiology"), by C. Lovatt Evans, with section on the special senses by H. Hartridge 704
    Of Pediatrics and Pediatric Nursing, by C. M. Knox 703
  Psychiatric Aspects of Modern Warfare, by R. S. Ellery 189
  Psychological Medicine: A Short Introduction to Psychiatry, with an Appendix on Psychiatry Associated with War Conditions, by D. Curran and E. Guttmann, with a foreword by J. J. Conybeare 776
  Psychology in General Practice, edited by A. Moncrieff 479
  Psychology of Women, The: A Psychoanalytic Interpretation, by H. Deutsch, with a foreword by S. Cobb 300
  Pulmonary Edema and Inflammation: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates, by C. K. Drinker 739
  Recent Advances—
    In Neurology and Neuropsychiatry, by W. R. Brain and E. B. Strauss 371
    In Obstetrics and Gynæcology, by A. W. Bourne and L. H. Williams 299

Page

Reviews—*Continued.*
  Rypins' Medical Licensure Examinations: Topical Summaries, Questions and Answers, edited by W. L. Bierring 740
  Symptomatic Diagnosis and Treatment, The, of Gynæcological Disorders, by M. M. White, with a foreword by F. J. Browne 704
  Synopsis—
    Of Obstetrics and Gynæcology, by A. W. Bourne 666
    Of Surgery, by H. Groves, edited by C. P. G. Wakeley 190
  Text-Book, A, of Surgical Pathology, by C. F. W. Illingworth and B. M. Dick 336
  Textbook—
    Of Medicine, by Various Authors, edited by J. J. Conybeare 408
    Of Neuropathology, by A. Weil 299
  Tissues of the Body, The: An Introduction to the Study of Anatomy, by W. E. Le Gros Clark 479
  Treatment, The, of Acute Intestinal Obstruction, by J. T. Chesterman 156
  Tropical Nutrition and Dietetics, by L. Nicholls 516
  Virus as Organism: Evolutionary and Ecological Aspects of Some Human Virus Diseases, by F. M. Burnet 372
  Vitamins in Medicine, The, by F. Bicknell and F. Prescott 552
  War Neuroses, by R. R. Grinker and J. P. Spiegel 630
  What People Are: A Study of Normal Young Men, by C. W. Heath 444
  Year Book, The 1945—
    Of General Medicine, edited by G. F. Dick, J. Burns Amberson, G. R. Minot, W. B. Castle, W. D. Stroud and G. B. Eusterman 920
    Of General Surgery, edited by E. A. Graham 883
    Of Neurology, Psychiatry and Endocrinology; Neurology—edited by H. H. Reese and M. G. Masten; Psychiatry—edited by N. D. C. Lewis; Endocrinology—edited by E. L. Sevringhaus 919
    Of Obstetrics and Gynecology, edited by J. P. Greenhill 884
    Of Pediatrics, edited by I. A. Abt, with the collaboration of A. F. Abt 884
    Of Radiology; Diagnosis: edited by C. A. Waters, associate editor W. B. Firor; Therapeutics: edited by I. L. Kaplan 666
    Of Urology, by O. S. Lowsley .. 776
Reynolds 339
Reynolds, L. 884
Rh and Hr Factors, Further Observations on the, and the Blood Group Frequencies in Papuans, by R. T. Simmons, J. J. Graydon and E. F. Woods (O) 537
Rh Blood Types, The, and their Reactions, by J. J. Graydon and R. T. Simmons (O) 861
Rheumatism, The Treatment of, by Dehydration (Leading Article) . 373
Rheumatoid Arthritis, Muscular Lesions in (C.C.) 670
Rh Iso-Immunization, Studies on, by N. R. Henry and R. T. Simmons (O) 897
Rich, Mr. Justice 254
Riddell, C. B. 779
Ring, O. I., Doherty and Sirl (Modern Practical Nursing Procedures) (rev.) 630
Riseman, J. E. F. 632
Robert, A. 86
Roberts, F. G. 674
Roberts, W. E.—An Analysis of Deformities among Recruits, with Remarks on Sub-Standard Types (O) 360
Robertson, E. Graeme 674
"Robin May" Memorial Fund, The .. 788
Robinow, C. F. 515
Rogers, C. R. 807
Rogers, Lambert — The Selection of Medical Students in Relation to the Needs of a Community and the Facilities Available for Instruction 162

Page

Rogerson, Edward, Death of 752
Rolleston, J. D. 54
Rome, R. M. 199
Rooms, Professional, for Civilian Medical Practitioners 569
Root, W. S. 483
Rose, N. H.—Some Medical Experiences as a Prisoner of War (O) 772
Rose, N.—Research at Sydney Hospital 750
Rose, T. F.—
  And Newson—
    Compound Fractures of the Extremities due to Gunshot Wounds: The Early Results of Treatment in the Field Aided by Penicillin Therapy (O) .. 330
    Early Results of the Treatment of Gunshot Wounds of Limb Joints Aided by Penicillin Therapy (O) 75
    Suture of Deep Soft Tissue War Wounds Aided by Penicillin Therapy (O) 364
    Treatment of Gunshot Wounds of the Chest in the Field, Aided by Penicillin Therapy (O) ... 290
  Bilateral Trigger Thumb in Infants (R) 18
  Newson and Watson—
    Early Results in a Short Series of Cases of Gunshot Wounds of the Abdomen (O) 180
Rosebery, Sidney Solomon, Death of 204
Ross, D.—Psychotic Casualties in New Guinea, with Special Reference to the Use of Convulsive Therapy in Forward Areas (O) 830
Ross, F. L. 229
Ross, I. Clunies 340
Ross, J. C. (Essentials of Surgery for Dental Students) (rev.) .. 372
Rossell, J. McF., and Finlayson—Malaria 784
Roth, N. 250
Roughton, F. J. W. 483
Rountree, P. M.—
  And Armytage—Hospital Blankets as a Source of Infection (O) .. 503
  Treatment, The, of Hospital Blankets with Oil Emulsions and the Bactericidal Action of "Fixanol C" (Cetyl Pyridinium Bromide) (O) 539
Rowbotham, G. F. (Acute Injuries of the Head: Their Diagnosis, Treatment, Complications and Sequels) (rev.) 20
Roxon-Ropschitz, I.—Ulcers in the Mouth: An Appeal for Help 382
Royal Alexandra Hospital for Children 814, 854
Royal Australasian College of Physicians—
    Annual Meeting 491, 820
    Examination for Membership 29
Royal Australasian College of Surgeons—
    Examination for Fellowship .. 94
    George Adlington Syme Scholarship, 1946 786
    Gordon Craig Scholarships 29, 678
    Meetings of the Courts of Examiners 130
    Post-Graduate Course in Surgery, A 130
Royal College of Obstetricians and Gynæcologists—Examination for Membership 131, 678
Rubella—
  Congenital Abnormalities in Infants following, Infectious Diseases during Pregnancy, with Special Reference to: A Third Series of Cases, by C. Swan and A. L. Tostevin (O) 645
  Maternal, Congenital Defects in Infants after: Further Reports and Discussions (C.C.) 23
Rubin, M. I. 742
Rundle, F. F. 521
Rupture—
  Intrapelvic, of the Urethra, Fracture of the Pelvis Complicated by 379
  Intraperitoneal, of the Urinary Bladder 380
  Of the Liver in the New-Born: Recovery after Blood Transfusion and Laparotomy, by F. Arden (R) 187
  Spontaneous, of the Spleen, with Notes on Two Cases, by K. M. Bowden (O) 506

Page
Russell, W. Ritchie 706
Ryan, H. 674
Ryle, J. A. 409
Rypins' Medical Licensure Examinations: Topical Summaries, Questions and Answers, edited by W. L. Bierring (rev.) 740

S

Saint, C. F. M. (An Introduction to Clinical Surgery: Surgical Wherefores and Therefores) (rev.) .. 848
Salaries, The, of Commonwealth Medical Officers 564
Saliva Factor, The, in Peptic Ulceration, by L. J. J. Nye (O) 114
Salmonella Blegdam—
  Causing Infections in Humans in New Guinea, Preliminary Report on Strains of, by N. Atkinson (O) 326
  Enteric Fever due to Bacterium Enteritidis Var. Blegdam: A Series of Fifty Cases in Australian Soldiers from New Guinea, by F. Fenner and A. V. Jackson (O) 313
Salmonella Blegdam Septicæmia and Suppurative Pericarditis with Recovery, Report of a Case of, by J. F. C. C. Cobley and T. E. Wilson (R) 439
Salmonella Infections, Typhoid and, Thoracic Complications of (C.C.) 555
Saltau, W. D. 199, 533
Sampimon, R. L. H., and Woodruff—Some Observations Concerning the Use of Hypnosis as a Substitute for Anæsthesia (O) ... 393
Sanderson, P. H. 632
Sandes, Francis Percival 598
Sandfly Fever (*see* Papataci Fever)
Sandler, A.—The Clinical Picture of Papataci Fever, especially in Palestine (O) 789
Sangster, C. B.—Hookworm Disease in Australian Soldiers, with Reports of Cases (O) 385
Sarcoidosis 674
Savill, A. (The Hair and Scalp) (rev.) 408
Saxton, W. J., Hatcher and Derrick—Chromoblastomycosis, with Reports of Two Cases Occurring in Queensland (O) 695
Scabies, The Treatment of, by J. G. Morris 380
Scalp, The Hair and, by A. Savill (rev.) 408
Scaphoid, Carpal, Fractures of the, by J. R. Barbour (O) 352
Scarborough, H. 375
Schneider, M.—A Sociological Study of the Aborigines in the Northern Territory and their Eye Diseases (O) 99
Scholarships, Gordon Craig 29, 678
Scholes, F. V. G. (Nursing in Acute Infectious Disease) (rev.) 300
Schour, I. 85
Schroeder 923
Schroeder, A. H. 446
Schweitzer, A. 481
Sciarra, D. 250
Sciatica 58
  By R. A. Money (O) 37
  Some Further Observations on, by N. Little (O) 33
Science—
  Australia and: The University of Sydney and Scientists—
    By A. J. Canny 381
    By N. E. Goldsworthy 346
    By D. R. Moore 418
    By F. W. Simpson 417
    (Leading Article) 249
  Post-War Rehabilitation of, The—An Address, by J. G. Wagner (O) 97
Scleroderma 92, 855
Sclerosis, Disseminated 26, 307
  Syndrome Resembling, A, as a Sequel to Encephalitis Lethargica 308
Scott, G. 487
Scott, G. E. M. 675
  Cœliac Disease: A Survey from the Children's Hospital, Melbourne (O) 659
Scott, Kaye 890
Scrub Typhus, Studies in the Control of, by R. N. McCulloch (O) .. 717
Scurvy 816

Page
Sears, W. G. (Medicine for Nurses) (rev.) 20
Sebire, I. B.—The Sociological Aspects of Community Housing (O) 327
Sen, S. 742
Septicæmia, Salmonella Blegdam, Report of a Case of, and Suppurative Pericarditis with Recovery, by J. F. C. C. Cobley and T. E. Wilson (R) 439
Serum, Human, An Immune Anti-M Iso-Agglutinin in, by R. J. Walsh (R) 115
Services Medical Officers' Association of New South Wales 788
    By J. M. Yeates 785
Sevringhaus, E. L. 919
Sewell, A. K., and Walsh—Some Effects of Blood Loss on Healthy Males (O) 73
Sex Hormones, Biological Action of, by H. Burrows (rev.) 920
Sheldon, S.—The Use and Misuse of Tetanus Antitoxin 131
Sherman 922
Shipton, E., and Parr—Spondylitis Ankylopoietica (O) 277
Shlimovitz, N.—Leprosy: A Report of Nine Cases among Natives of the Mount Hagen Area in New Guinea (R) 369
Shock, Experimental, Toxic Factors in (C.C.) 707
Short, A. R. 341
Siam, Burma and; Clinical Lessons from Prisoner of War Hospitals in the Far East, by A. E. Coates (O) 753
Siedlecky, S.—
  National Health Service Bill of Great Britain, The 893
  Results, The, of Penicillin Therapy in the Treatment of Gonorrhœa (O) 904
Simmons, J. S., *et alii* (Global Epidemiology: A Geography of Disease and Sanitation) (rev.) . 591
Simmons, R. T.—
  And Christie—Penicillin Sensitivity of Streptococci Mostly of Groups A, B, C and G (O) 349
  And Graydon—
    Blood Groups in the Maori (O) 135
    Rh Blood Types, The, and their Reactions (O) 861
  And Henry—Studies on Rh Iso-Immunization (O) 897
  Graydon and Woods—
    Blood Group Frequencies in Hollanders (O) 576
    Further Observations on the Rh and Hr Factors, and the Blood Group Frequencies in Papuans (O) 537
Simmons, W. F. 230
  Federal Medical War Relief Fund, The 418
Simpson, F. W.—Australia and Science: The University of Sydney and Scientists 417
Simpson, G. 198, 530
Singapore Captivity, Medical Aspects of the, by C. Harvey (O) 769
Sinn, H. 28, 450, 451
Sinuses, Tuberculous 378
Sinusitis Treated by Chemotherapy at an Australian General Hospital, Report on a Series of Cases of, by R. H. Bettington and G. K. Vincent (O) 358
Sirl, M. B., Doherty and Ring (Modern Practical Nursing Procedures) (rev.) 630
Skin, Penicillin and the (C.C.) 411
Sleep Paralysis (C.C.) 811
Sloan, R. P. (Hospital Color and Decoration) (note) 190
Smith, E. Temple 674
Smith, G. E., Corkill and Pollock—The Value of Biochemical Tests in the Interpretation of Jaundice (O) 617
Smith, H. 712
Smith, H. Fairfield 916
Smith, R. 743
Smith, Redford John Wright, Death of 716
Smithy, H. G. 483
Soldiers, Backache in, by D. Stuckey (O) 838
Solis-Cohen, M. 158
Sollmann, T. 375

Page
Southby, R. 28, 60, 129, 130, 533, 640, 710, 712, 890
Souttar, H. S. 482
Spearman, H. L. 379, 926
Special Article—
  Researches on "Paludrine" (M.4888) in Australia 234
  Selection, The, of Medical Students in Relation to the Needs of a Community and the Facilities Available for Instruction, by Lambert Rogers 162
Specialist, The Definition of a 565
Spelling of Words, The, by D. Monk Adams 345
Spencer", "Dr.", The Remarkable, by R. T. Kennedy (O) 149
Spencer, S. L. 379, 779
  And Poate—"Thio" Drugs in Thyreotoxicosis 750
    (O) 493
Spens, W. ("The Spens Report") .. 809
Spiegel, J. P., and Grinker (War Neuroses) (rev.) 630
Spinach, Lessons from (C.C.) 922
Spinal Anæsthesia and Chloroform: A Comparison of Mortality—
    By C. E. Corlette 892
      (O) 545
    By S. V. Marshall 750
    By J. E. Thomas 750
Spinal Analgesia—
  By J. Oldham (O) 432
  "Non-Take", by P. Gill 606
Spleen, Spontaneous Rupture of the, with Notes on Two Cases, by K. M. Bowden (O) 506
Spondylitis Ankylopoietica—
  By E. Haslett Frazer 453, 677
  By "Froach Eilean" 535
  By L. J. A. Parr and E. Shipton (O) 277
Spondylolisthesis—
  And Hemivertebra 26
  Radiographic Analysis of, A, by I. Meschan (O) 465
Spriggs, E. 779
Springthorpe, G. 640
Stain, Field's, Notes on, by P. M. de Burgh (O) 544
Stanbury, J. B. 339
Staphylococcal Enteritis in Children, by F. Draper and G. W. Brown (O) 469
Staphylococcal Meningitis and Ventriculitis: Cure by Penicillin, by D. Miller and H. J. Delohery (R) 512
Staphylococci, Acquired Resistance of, to the Action of Penicillin, by E. A. North and R. Christie (O) 176
Stark, A. W. B. 819
Starke, Mr. Justice 264
"Starling's Principles of Human Physiology", *see* Principles of Human Physiology, by C. Lovatt Evans (rev.) 704
Starr, I. 594
Stats, D. 743
Stawell Oration, The Sir Richard—Medical Aspects of Red Cross in the Second World War, by J. Newman Morris (O) 169
Stawell Prize, The 751
Steindler, A. 53
Steiner, G. 670
Stening, S. E. L.—Experiences as a Prisoner of War in Japan (O) .. 773
Stephen, J. N. R. 894
  Placenta Prævia 490
Stephen, R. L. 855
Stephens, H. D. 27, 28, 59, 92, 129, 130, 162, 163, 450, 486, 641, 675
Stephens, H. J. B.—Observations on Psychoses Occurring in Service Personnel in Forward Areas (O) 145
Stevens, A. M. 193
"Stevens-Johnson Syndrome, The" (C.C.) 193
Stockman, Professor Ralph, by M. Kelly 822
Stokes, E. H. 378
Stokes, H. L. 451
Stenham, F. V.—The Treatment of Inguinal Hernia (O) 185
Storch, Young Dr., of Adelong, by R. T. Kennedy (O) 362
"Story, The, of a Great Achievement" (Leading Article) 337
Strauss, E. B., and Brain (Recent Advances in Neurology and Neuropsychiatry) (rev.) 371

Page

Streptococci, Mostly of Groups A, B, C and G, Penicillin Sensitivity of, by R. T. Simmons and R. Christie (O) 349
Stricture, Congenital, of the Œsophagus, by R. Flynn (R) 702
Stroud, W. D. 920
Stuart-Harris, C. H. 411
Stuckey, D.—Backache in Soldiers (O) 838
Sudeck's Post-Traumatic Bone Dystrophy 486
Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum, The Treatment of Hæmophilus Influenzæ Meningitis with, by E. A. North, H. Wilson and G. Anderson (O) 215
Sulphonamide-Resistant Patient, The Empirical Use of Penicillin for a, by H. G. Cummine and J. W. S. Laidley (R) 476
Summerskill, E. 84
Sunburn, The Prevention of (C.C.) .. 375

Surgery—
  Clinical, An Introduction to: Surgical Wherefores and Therefores, by C. F. M. Saint (rev.) 848
  Essentials of, for Dental Students, by J. C. Ross (rev.) 372
  General, The 1945 Year Book of, edited by E. A. Graham (rev.) . 883
  Limb, Extensile Exposure Applied to, by A. K. Henry (rev.) 444
  Operative, Demonstrations of, for Nurses, by H. Bailey (rev.) 516
  Ophthalmic, Penicillin in Pre-Operative and Post-Operative, by T. Boyd Law (R) 442
  Rectal, The Principles and Practice of, by W. B. Gabriel (rev.) 228
  Synopsis of, by H. Groves, edited by C. P. G. Wakeley (rev.) 190
Sutcliffe, Ernest Weston, Death of .. 859
Sutherland, B. M. 202
Sutton, H.—Centenaries of "Forty-Five" (O) 421

Swan, C.—
  And Tostevin—Congenital Abnormalities in Infants following Infectious Diseases during Pregnancy, with Special Reference to Rubella: A Third Series of Cases (O) 645
  Case, A, of Post-Varicellal Encephalitis showing Bilateral Softening of the Neostriatum and Terminal "Tetanoid Chorea" (Gowers) (R) 697
Swan, M. S. A. 234
Sweetman, K. F. D.—Wounds Caused by Small Fish 345
Sydney Hospital 378, 631
  Research at, by N. Rose 750
Syme Scholarship, 1946, George Adlington 786
Symonds, C. P. 22
Syphilis, Gastric 378
Syred, R. H.—Placenta Prævia (O) 352

T

Tait, L. G. 816
Talk (note) 552
Taylor 339
Taylor, A. H. 375
Taylor, G. C. 157
Taylor, R. J. 814
Tedeschi, C. D. 885
Telephone Directories 567
Telfer, A. C. 379
Tendon Sheath Infections of the Hand, Penicillin Therapy for, by J. A. Marsden (O) 435
Tennent, Joseph Thom, Death of 536, 823
Tenosynovitis, Suppurative, in the Fingers, Treatment of, by L. I. Burt (O) 399
"Tetanoid Chorea" (Gowers), A Case of Post-Varicellal Encephalitis showing Bilateral Softening of the Neostriatum and, by C. Swan (R) 697

Tetanus—
  Post-Abortional, with Recovery, by J. Hutchings and A. Wheildon (R) 404
  Treated with Penicillin; Recovery, by J. L. Grove (R) 226
Tetanus Antitoxin, The Use and Misuse of, by S. Sheldon 131

Page

Thailand, Malaya and, Observations by a Pathologist during Three and a Half Years as a Prisoner of War in, by A. T. H. Marsden (O) 766
"Thio" Drugs in Thyreotoxicosis, by H. R. G. Poate and S. L. Spencer 750
  (O) 493

Thiouracil—
  Thyreotoxicosis Treated with 27
  Toxicity of, The (C.C.) 850
Thomas, A. C. 603, 926, 927
  Address, An (O) 573
Thomas, J. E.—Spinal Anæsthesia and Chloroform: A Comparison of Mortality 750
Thomas, R. C. 554

Thompson, G. C. V.—
  And Chambers — Chylangioma of the Mesentery, with Report of a Case, and a Brief Discussion of Mesenteric Cysts (O) 210
  Traumatic Arterio-Venous Aneurysm of the Femoral Blood Vessels (O) 104
Thornton, M.—The Federal Medical War Relief Fund 418

Thrombosis—
  In Infancy, Arterial Embolism and (C.C.) 87
  Septic, of the Cavernous Sinus Treated with Penicillin 674

Thyreotoxicosis—
  "Thio" Drugs in—
    By H. R. G. Poate and S. L. Spencer 750
    (O) 493
  Treated with Thiouracil 27
Tibbetts, D. M. 707
Tick Paralysis (C.C.) 339
Tick Typhus in North Queensland, A Case of, by J. Brody (R) 511
Tidy, H. 341
Tigerstedt 810
Times, The 337
Tissues of the Body, The: An Introduction to the Study of Anatomy, by W. E. Le Gros Clark (rev.) 479
Tivey, E. A. 58, 59, 598
Tobias, C. A. 483
Tomb, J. Walker—Renal Failure and Anoxia 63
Tonge, J. I. 234
Tonsils and Adenoids, A Method for the Removal of, under Local Anæsthesia with the Patient in the Recumbent Position, by R. H. Bettington (O) 882

Toothache and Folk-Lore—
  By P. G. Dane 275
  (C.C.) 54
Toowoomba and Environs, The Botany of, and its Relation to Clinical Allergy of the Upper Respiratory Tract, by C. R. Morton (O) 585
Torrents, E. 446
Tostevin, A. L., and Swan—Congenital Abnormalities in Infants following Infectious Diseases during Pregnancy, with Special Reference to Rubella: A Third Series of Cases (O) 645
Toxicology, Medical Jurisprudence and, by J. Glaister (rev.) 480
Toxoplasmic Encephalomyelitis and Chorioretinitis 674
Trail, R. R. 778
  (Chest Examination: The Correlation of Physical and X-Ray Findings in Diseases of the Lung, with a foreword by W. L. Langdon-Brown) (rev.) 703

Training—
  Medical, The Adequacy of—
    By K. J. B. Davis 275
    By B. Williams (O) 147
  Prior to Discharge, The, of Certain Medical Officers 30, 240
Transposition of Viscera 129
Trauma, Cerebral, and its Mechanisms (Leading Article) 885
Travel, Overseas, for Australian Students (Leading Article) 191
Treatment, Physical, by Movement, Manipulation and Massage, by J. B. Mennell (rev.) 444

Trigeminal Neuralgia—
  By F. J. Clark 895
  By A. Lyons 750

Page

Trigger Thumb, Bilateral, in Infants, by T. F. Rose (R) 18
Trikojus, V. 779
Trocar and Cannula, A, for the Intravenous Administration of Fluids, by R. V. Pratt (O) ... 629
True, E. 196, 203
Truman, President 301
Trumble, H. C. 817
Tsutsugamushi Disease, A Warning, by J. T. Gunther 419
Tuberculin Patch Test, The: A Comparison with the Mantoux Test, by Catherine Hudson and F. E. Hytten (O) 475

Tuberculosis—
  Manual of, A, Clinical and Administrative, by E. A. Underwood, with an introduction by J. R. Currie (rev.) 630
  Pulmonary—
    Early, The Problem of (C.C.) .. 778
    Some Notes on the Treatment of, by C. J. Officer Brown (O) .. 825
    Treated by Artificial Pneumothorax 378
Tuberculosis Patients and Hospitals—
  By A. H. Penington 237
  By D. B. Pitt 30
Tuberculous Sinuses 378

Tumour—
  Breast, Latent Primary, by T. R. Gaha (R) 590
  Of Bone 890
  Of the Axilla 854
  Possibly Cerebral: Organic Brain Disease 309
  Wilms's 379
Tumours of the Central Nervous System, Early Diagnosis in, by W. Lister Reid (O) 865
Tunbridge, E. B. 927
Turbulent Flow, Murmurs from (C.C.) 339
Turnbull, H.—Inguinal Hernia and its Repair (O) 109
Turner, E. K.—Purulent Meningitis of Infancy and Childhood: A Twelve Months' Survey of the Results of Treatment by Penicillin (O) 14
Typhoid and Salmonella Infections, Thoracic Complications of (C.C.) 555

Typhus—
  Scrub—
    Studies in the Control of, by R. N. McCulloch (O) 717
    Use, The, of a Polysaccharide of Bacillus Proteus OXK in the Diagnosis of, by P. de Burgh (O) 81
  Tick, in North Queensland, A Case of, by J. Brody (R) 511

U

Ulcer—
  Peptic, Duodenal and Jejunal: Technic of Resection, by R. Nissen, with a foreword by O. H. Wangensteen (rev.) 189
  Problem, The (C.C.) 632
Ulceration, Peptic—
  Duodenal and Jejunal: Technic of Resection, by R. Nissen, with a Foreword by O. H. Wangensteen (rev.) 189
  Saliva Factor in, The, by L. J. J. Nye (O) 114
Ulcers in the Mouth: An Appeal for Help—
    By A. Bulteau 418
    By L. Hewitt 418
    By B. Hiller 490
    By "M.B., B.S." 274
    By F. F. McMahon 715
    By E. M. Murphy 534
    By I. Roxon-Ropschitz 382
Underwood, E. A. (A Manual of Tuberculosis, Clinical and Administrative, with an introduction by J. R. Currie) (rev.) 630
Unemployment and Sickness Benefits Act, 1944, The 565
United States of America—
  Discussions on Health Legislation in the (Leading Article) 301
  Recent Experiences in Canada and the, by H. M. James (O) 827
University Intelligence—University of Melbourne: Nuffield Medical Endowment 895

Page

- University of Queensland 127
- University of Queensland Post-Graduate Medical Education Committee (*see* Post-Graduate Work)
- University of Sydney—
  - And Scientists: Australia and Science—
    - By A. J. Canny 381
    - By N. E. Goldsworthy 346
    - By D. R. Moore 418
    - By F. W. Simpson 417
    - (Leading Article) 249
  - Chair of Child Health at the 601
- Ureters, Bilateral Transplantation of the, Carcinoma of the Bladder with 379
- Urethral Discharges, Non-Gonococcal, Chronic Vesiculitis as a Factor in the Production of, by C. E. Marshall (O) 846
- Urethritis, Non-Gonococcal—
  - In Australian Troops Stationed in Borneo, by S. Williams (O) 693
  - In Man, Pleuropneumonia-Like Organisms in Cases of, and in Normal Female Genitalia, by W. I. B. Beveridge, A. D. Campbell and P. E. Lind (O) 179
- Urology, The 1945 Year Book of, by O. S. Lowsley (rev.) 776

V

- van der Heide, C. 811
- Van Someren, George Arbuthnot, Death of 716
- Vascular Diseases and their Relationship to the Eye 674
- Vaux, N. W. 408
- Venereal Disease, Handbook of Diagnosis and Treatment of, by A. E. W. McLachlan (rev.) 336
- Ventriculitis, Meningitis and, Staphylococcal: Cure by Penicillin, by D. Miller and H. J. Delohery (R) 512
- Vesiculitis, Chronic, as a Factor in the Production of Non-Gonococcal Urethral Discharges, by C. E. Marshall (O) 846
- Vickers, T. H.—Research at the Kanematsu Institute 642
- Vickers, Wilfred, Death of 384
- Vickery, D. G. R. 854
- Vincent, G. K., and Bettington—Report on a Series of Cases of Sinusitis Treated by Chemotherapy at an Australian General Hospital (O) 358
- Virilism, Adrenal 379
- Virus—
  - As Organism: Evolutionary and Ecological Aspects of Some Human Virus Diseases, by F. M. Burnet (rev.) 372
  - Of Newcastle Disease of Fowls, The, A Note on Two Laboratory Infections with, by S. G. Anderson (R) 371
- Viswanathan, R. 55
- Vitamin C (Ascorbic Acid) in Keratitis 675
- Vitamins—
  - Availability of, The, in Various Foods and Pharmaceutical Products (C.C.) 410
  - In Medicine, The, by F. Bicknell and F. Prescott (rev.) 552
  - Parenteral Use of, The (Leading Article) 667
- Volkmann's Ischæmic Contracture of the Forearm, by L. Ball (R) 224
- Volvulus of the Small Bowel, with Report of a Case Treated by Resection with Recovery, by D. M. Embelton and P. Jones (O) 144
- von Ries, J. 595

W

- Waddy, R. G. 674
- Wagner, J. G. 127, 129
  - Address, An—The Post-War Rehabilitation of Science (O) 97
- Wagner, Senator 302
- Wait, L. 61, 92, 93, 451
- Wakefield, E. G. 303
- Wakeley, C. P. G. 190
- Walch, J. H. B. 96
- Walsh, R. J.—
  - And Sewell—Some Effects of Blood Loss on Healthy Males (O) 73
  - Immune Anti-M Iso-Agglutinin, An, in Human Serum (R) 115

Page

- Walshe, F. M. R. (Diseases of the Nervous System) (rev.) 52
  - Recovery (R) 439
- Waltz, A. D. 742
- Wangensteen, O. H. 189, 633
- War—
  - And Humanism, by A. G. Butler 165
  - Germany during the, Medical Education and Medical Practice in (C.C.) 923
  - Medical Aspects of Red Cross in the Second World—The Sir Richard Stawell Oration, by J. Newman Morris (O) 169
  - Of 1939-1945, The Medical History of the (C.C.) 633
- War Neuroses, by R. R. Grinker and J. P. Spiegel (rev.) 630
- War Neurotics, The Rehabilitation of 926
  - By C. M. McCarthy (O) 910
  - By H. H. Willis (O) 912
- Warfare, Psychiatric Aspects of Modern, by R. S. Ellery (rev.) 189
- Warren, S. 671
- Wartenberg, R. (The Examination of Reflexes: A Simplification, foreword by F. Kennedy) (rev.) 84
- Wasserman, L. R. 743
- Waters, C. A. 666
- Watson, D., Rose and Newson—Early Results in a Short Series of Cases of Gunshot Wounds of the Abdomen (O) 180
- Watson, H. Preston 58
- Webster, R. 163, 636, 641, 710
- Weil, A. (Textbook of Neuropathology) (rev.) 299
- Weinberg, J. 811
- Wenner, R. 595
- Wesley, C. H. 854
- West, R. F. K., and Mackerras, D.D.T. Poisoning in Man (R) 400
- West's Operation (Endonasal Dacryocystostomy), Some Notes on, by G. A. D. McArthur (O) 508
- Whayne, T. F., *et alii* (Global Epidemiology: A Geography of Disease and Sanitation) (rev.) 591
- Wheildon, A., and Hutchings—Post-Abortional Tetanus with Recovery (R) 404
- Whitaker, J. G. 129, 162, 163, 450, 487, 891, 929
- White, C.—On the Prickly Heat 382
- White, M. L. 555
- White, M. M. (The Symptomatic Diagnosis and Treatment of Gynæcological Disorders, with a foreword by F. J. Browne) (rev.) 704
- White, O. (Green Armour) (note) 516
- White Paper on Health Service in Great Britain 524
- Whooping-Cough, Penicillin in the Laboratory Diagnosis of, A Note on the Use of, by P. M. Anderson (O) 244
- Widdowson, E. W. 303
- Wilkinson, William Camac, Death of 204, 488
- Willcocks, G. C. 230
- Williams, B. 926
  - Adequacy of Medical Training, The (O) 147
- Williams, D. 674
- Williams, L. H., and Bourne (Recent Advances in Obstetrics and Gynæcology) (rev.) 299
- Williams, S.—Non-Gonococcal Urethritis in Australian Troops Stationed in Borneo (O) 693
- Willink, Mr. 741
- Willis, H. H. 926, 927
  - Rehabilitation, The, of War Neurotics (O) 912
- Willius, F. A. 886
- Wilms's Tumour 379
- Wilson, A. M. 530, 533
  - The R. H. Fetherston Memorial Lecture (O) 1
- Wilson, C. W. 521
- Wilson, H., North and Anderson—
  - Resistance, The, of Hæmophilus Influenzæ to the Action of Penicillin, with Special Reference to Type B Strains (O) 626
  - Treatment, The, of Hæmophilus Influenzæ Meningitis with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum (O) 215
- Wilson, James Thomas—
  - Death of 31
  - Memorial, A, to the Late 348
  - Memorial, A, to the Late Professor 384

Page

- Wilson, T. E. 555
  - And Cobley—Report of a Case of Salmonella Blegdam Septicæmia and Suppurative Pericarditis with Plasma Protein Estimations in Battle Casualties (O) 153
- Winikoff, D. 923
  - Ascorbic Acid in the Milk of Melbourne Women (O) 205
- Winkle, W. J., *et alii* 851
- Wittwer, S. H. 922, 923
- Wolf, G. A., junior 23
- Wolff, H. G. 23
- Wolkin, J. 53
- Women—
  - In Medicine (Leading Article) 849
  - Psychology of, The: A Psychoanalytic Interpretation, by H. Deutsch, with a foreword by S. Cobb (rev.) 300
- Women's Hospital, Melbourne, Obstetrical Society of the 196, 530
- Woodland, L. J. 26
- Woodruff, M. F. A., and Sampimon—Some Observations Concerning the Use of Hypnosis as a Substitute for Anæsthesia (O) 393
- Woods, E. F., Graydon and Simmons—
  - Blood Group Frequencies in Hollanders (O) 576
  - Further Observations on the Rh and Hr Factors, and the Blood Group Frequencies in Papuans (O) 537
- Woodward, H. L., Gardner *et alii* (Obstetric Management and Nurssing) (rev.) 703
- Words, Acceptable: Quotations with a Medical Bearing, by J. B. Cleland (O) 876
- Wound, Gunshot, of the Large and Small Intestines, A Case of, by D. R. Leslie (R) 406
- Wounds—
  - Caused by Small Fish, by H. Flecker 534
  - Gunshot—
    - Of the Abdomen, Early Results in a Short Series of Cases of, by T. F. Rose, A. Newson and D. Watson (O) 180
    - Of the Chest, Treatment of, in the Field Aided by Penicillin Therapy—
      - By P. Braithwaite 418
      - By T. F. Rose and A. Newson (O) 290
    - Compound Fractures of the Extremities due to: The Early Results of Treatment in the Field Aided by Penicillin Therapy, by T. F. Rose and A. Newson (O) 330
    - Of Limb Joints, Early Results of the Treatment of, Aided by Penicillin Therapy, by T. F. Rose and A. Newson (O) 75
  - Head, Transient Disturbances following (C.C.) 706
  - War, Deep Soft Tissue, Suture of, Aided by Penicillin Therapy, by T. F. Rose and A. Newson (O) 364
- Wright, L. E. A. 631
- Wright-Smith, Redford John, Death of 931
- Wynn, A. 533

X

- X-Ray Diagnosis, Pediatric: A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology, by J. Caffey (rev.) 807
- X-Ray Films, The Placing of, in Envelopes, by D. Anderson 930
- X-Ray Services in North Coast Towns of New South Wales 601
- X Rays, The Fiftieth Anniversary of the Discovery of, by C. E. Eddy (O) 138

Y

- Yaws and Beriberi: A Warning, by C. M. Deland 676
- Year Book, The 1945—
  - Of General Medicine, edited by G. F. Dick *et alii* (rev.) 920
  - Of General Surgery, edited by E. A. Graham (rev.) 883
  - Of Neurology, Psychiatry and Endocrinology, edited by H. H. Reese *et alii* (rev.) 919

Page

Year Book—*Continued.*
  Of Obstetrics and Gynecology, edited by J. P. Greenhill (rev.) 884
  Of Radiology; Diagnosis: edited by C. A. Waters, associate editor, W. B. Firor; Therapeutics: edited by I. L. Kaplan (rev.) .. 666
  Of Urology, by O. S. Lowsley (rev.) 776
Yeates, J. M.—Services Medical Officers' Association of New South Wales 785
Young, J. H.—Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease 382
  (O) 45
Young, L. E. 743

Z

Zamecnik, P. C. 707
Ziegler, E. E. 707
Zollinger, R. M. 923

INDEX TO ILLUSTRATIONS.

Page

Ascorbic Acid in the Milk of Melbourne Women, by D. Winikoff . 205
Aspinall, Andrew Eric and Archibald John 238
Blankets, Hospital, as a Source of Infection, by P. M. Rountree and J. E. Armytage 503
Cæsarean Section, Blood Loss in, by L. Benson 842
Chylangioma of the Mesentery, with Report of a Case, and a Brief Discussion of Mesenteric Cysts, by G. C. V. Thompson and C. H. Chambers 210
Cœliac Disease: A Survey from the Children's Hospital, Melbourne, by G. E. M. Scott 659
Deformities among Recruits, An Analysis of, with Remarks on Sub-Standard Types, by W. E. Roberts 360
Diabetes Mellitus, A Case of, with Hyperlipæmia and Hypercholesterolæmia, by A. M. Henderson 513
Disk Disease, Lumbar Intervertebral, Recent Advances in the Diagnosis and Treatment of, by J. H. Young 45
Enteric Fever due to Bacterium Enteritidis Var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from New Guinea, by F. Fenner and A. V. Jackson .. 313
Fibrocystic Disease, Congenital, of the Pancreas, by P. E. Blaubaum 833
Foreign Bodies, Unknown, in the Lung, by J. B. Cleland 225
Gunblast, Experimental Observations on the Aural Effects of, by N. E. Murray and G. Reid 611
Hardie, David 95
Hookworm Disease in Australian Soldiers, with Reports of Cases, by C. B. Sangster 385
Human Body after Death, The Study of the, by K. Inglis 222

Page

Hydrophobia, A Case of So-Called: A Matter of Diagnosis, by W. E. L. H. Crowther 69
Leprosy, A Report of Nine Cases among Natives of the Mount Hagen Area in New Guinea, by N. Shlimovitz 369
Lipomata of the Uterus, with Report of a Case, by J. D. Hicks 184
Lymphangioendothelioma, Abdominal, or Peritoneal Mesothelioma, A Case of, by I. Hamilton and J. B. Cleland 477
Masculinization, A Contribution to the Problem of, by H. F. Bettinger and H. Jacobs 10
Meningitis, Purulent, of Infancy and Childhood: A Twelve Months' Survey of the Results of Treatment by Penicillin, by E. K. Turner 14
Moran, Herbert Michael 415
Moulds in the Lungs, by J. B. Cleland 247
Penicillin Therapy for Tendon Sheath Infections of the Hand, by J. A. Marsden 435
Periarteritis (Polyarteritis) Nodosa, A Case of, by J. Game 295
Pigdon, Douglas Clelland 452
Poliomyelitis, An Epidemic of, Occurring among Troops in the Middle East, by J. E. Caughey and W. M. Porteous 5
Prisoner of War Hospitals in the Far East (Burma and Siam), Clinical Lessons from, by A. E. Coates 753
Prisoner of War Hospitals in the Far East, Clinical Lessons from, by E. E. Dunlop 761
Prisoner of War in Malaya and Thailand, Observations by a Pathologist during Three and a Half Years as a, by A. T. H. Marsden 766
Psychotic Ex-Servicemen, Some Remarks on, by A. T. Edwards .. 738

Page

Salmonella Blegdam Septicæmia and Suppurative Pericarditis with Recovery, Report of a Case of, by J. F. C. C. Cobley and T. E. Wilson 439
Sciatica—
  By R. A. Money 37
  Some Further Observations on, by N. Little 33
Spondylitis Ankylopoietica, by L. J. A. Parr and E. Shipton 277
Spondylolisthesis, A Radiographic Analysis of, by I. Meschan 465
Stricture, Congenital, of the Œsophagus, by R. Flynn 702
"Thio" Drugs in Thyreotoxicosis, by H. R. G. Poate and S. L. Spencer 493
Trocar and Cannula, A, for the Intravenous Administration of Fluids, by R. V. Pratt 629
Tumour, Latent Primary Breast, by T. R. Gaha 590
Typhus, Scrub, Studies in the Control of, by R. N. McCulloch 717
Volkmann's Ischæmic Contracture of the Forearm, by L. Ball 224
Wilkinson, William Camac 488
X Rays, The Fiftieth Anniversary of the Discovery of, by C. E. Eddy 138

SPECIAL PLATES.

Chromoblastomycosis, with Reports of Two Cases Occurring in Queensland, by W. J. Saxton, F. Hatcher and E. H. Derrick facing page 696
Encephalitis, Post-Varicellal, A Case of, Showing Bilateral Softening of the Neostriatum and Terminal "Tetanoid Chorea" (Gowers), by C. Swan facing page 697
Stricture, Congenital, of the Œsophagus, by R. Flynn, facing page 702

◆

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, JANUARY 26, 1946. No. 4.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units 10/6
This quantity is sufficient for a series of parenteral doses.
(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units 5/6
This quantity is intended for a single parenteral dose.
(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units 4/6
This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired.
(Available also in boxes holding 6 ampoules.)

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

The Penicillin Order published in *Gazette* No. 189 of 20th September, 1944, and in THE MEDICAL JOURNAL OF AUSTRALIA of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

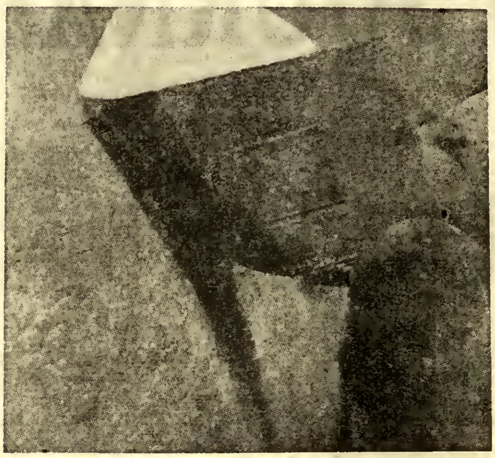
The addresses of the Senior Commonwealth Medical Officers are: **NEW SOUTH WALES**, Customs House, Circular Quay, Sydney; **VICTORIA**, A.C.A. Building, 118 Queen Street, Melbourne; **SOUTH AUSTRALIA**, C.M.L. Building, 41-47 King William Street, Adelaide; **WESTERN AUSTRALIA**, 4th Floor, G.P.O., Perth; **TASMANIA**, Commonwealth Health Laboratory, Launceston; **QUEENSLAND**, Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES
PARKVILLE, N.2, VICTORIA, AUSTRALIA

ANDREW'S PHARMACEUTICAL PREPARATIONS

TUBERCULIN PATCH TEST

(Vollmer) Lederle



ANDREW'S LABORATORIES presents a simple and convenient device to the Australian Medical Profession in introducing and distributing the

TUBERCULIN PATCH TEST (Vollmer) Lederle

It represents a reliable, safe and painless test, in a stable form which avoids the use of needles or any instrument, saves time, as it may be applied by a nurse acting under the direction of a physician. The VOLLMER PATCH TEST is a valuable method for use in any public health campaign. It is of particular value for testing

infants and pre-school age children

The test is made by the application of a strip of adhesive tape (with tuberculin-treated squares) to the skin, showing a reaction on removal of the tape after 48 hours.

Further instructions are given in the leaflet attached to each packing distributed by our Laboratories.

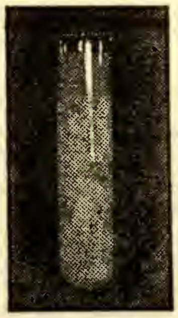
ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS

LACTOGEN AND VI-LACTOGEN . . . *and why they are the most easily digested of all prepared foods for infants*

When our research laboratories were developing the new Spray Process Lactogen and Vi-Lactogen, they thought and worked with the single purpose of making them the best of all prepared foods for infants. Specifically, the important advantages gained by adopting the exclusive Spray Process of manufacture are:

1. Forms a softer, finer curd, more easily assimilated by baby's delicate stomach.
2. The soft, finely divided Lactogen and Vi-Lactogen curd is far more readily digestible.
3. Fat separation is avoided during feeding.



Photograph shows fine, uniform texture of Lactogen curd.

Based on the scientific fact that all milk, in the process of digestion, forms a curd, and that the ease or difficulty of digestion is dependent upon the size and toughness of the curd formed, the ultimate aim of our laboratories was to produce a baby food that would form the softest and finest of curds, and at the same time, retain the full nourishing qualities necessary to baby's growth and development. Lactogen and Vi-Lactogen, made by the new exclusive Spray Process, forms a softer, finer curd of uniform texture, making them the easiest of all prepared foods for infants to digest. In addition, both foods are modified with added cream and lactose so that baby can quickly assimilate all the nutritive goodness. Whether used as supplementary to, or wholly as a substitute for, breast milk, Lactogen and Vi-Lactogen can be recommended as safe, alternative foods of the highest quality. Vi-Lactogen . . . modified more closely to breast milk composition, is intended for the young baby. Lactogen, with its higher protein content, is the ideal food as baby grows older.

THE MILK FOOD
LACTOGEN
NESTLÉ'S PRODUCT

LACTOGEN
AND
VI-LACTOGEN
Nestlé's Product

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, JANUARY 26, 1946. No. 4.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

An Address—The Post-War Rehabilitation of Science, by J. G. Wagner, B.Sc., M.B., Ch.M. .. 97
A Sociological Study of the Aborigines in the Northern Territory and their Eye Diseases, by Michael Schneider 99
Traumatic Arterio-Venous Aneurysm of the Femoral Blood Vessels, by George C. V. Thompson, F.R.C.S. 104
Putrid Lung Abscess, by C. J. Officer Brown 107
Inguinal Hernia and its Repair, by Harley Turnbull 109
The Saliva Factor in Peptic Ulceration, by L. J. J. Nye 114

REPORTS OF CASES—

An Immune Anti-M Iso-Agglutinin in Human Serum, by R. J. Walsh 115

NOTES ON BOOKS, CURRENT JOURNALS AND NEW APPLIANCES—

The Commodore 116

LEADING ARTICLES—

The Retirement of Surgeon Captain W. J. Carr .. 117
The Journal and the Recent Industrial Unrest .. 117

CURRENT COMMENT—

The Results of Prefrontal Leuchotomy 118
Post-War Germany: A Psychiatric Problem 119

ABSTRACTS FROM MEDICAL LITERATURE—

Physiology 120
Biochemistry 121

BRITISH MEDICAL ASSOCIATION NEWS— Page.

Annual Meeting 122

MEDICAL SOCIETIES—

Melbourne Pædiatric Society 129

THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS—

A Post-Graduate Course in Surgery 130
Meetings of the Courts of Examiners 130

THE ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS—

Examination for Membership 131

POST-GRADUATE WORK—

Courses in Queensland in 1946 131

CORRESPONDENCE—

The Use and Misuse of Tetanus Antitoxin 131
Functional Disorders 131

NAVAL, MILITARY AND AIR FORCE—

Appointments 132

OBITUARY—

James Whitson Kemp Bruce 132
DIARY FOR THE MONTH 132
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 132
EDITORIAL NOTICES 132

An Address.[1]

THE POST-WAR REHABILITATION OF SCIENCE.

By J. G. WAGNER, B.Sc., M.B., Ch.M.,
President of the Queensland Branch of the British Medical Association.

THE year 1945 will be entered in the annals of world history as that which marked the fall of the tyranny of the Axis, and the victory of the United Nations as champions of democracy, over the evil powers of their enemies. No one who witnessed the exuberant and spontaneous joy of "V.P." day and compared it with the restrained celebration of "V.E." day a few months earlier, could doubt that the attainment of victory and the restoration of peace had long been the earnest hope of all our people. And though the present universal turmoil appears to deny the world's aspirations towards freedom, yet in itself it is an expression of the freedom that has been restored, even though the celebrations savour too strongly of the time-honoured folly of cutting off one's nose to spite one's face. Even if at present the omens are unpropitious, the building of a structure that will place war outside the pale of civilization and allow mankind to devote its energies to the proper pursuit of the arts of peace, must surely be one of man's noblest aims, to be pursued equally by all peoples. There still remain enemies to be conquered, enemies whose conquest will require all man's skill and knowledge and energy. These enemies are poverty and ignorance, crime and disease.

Even more than its predecessor, World War II has been remarkable for the use made by the belligerent nations of available scientific knowledge, and the development of scientific research to provide new methods for the prosecution of the war in all its aspects. The range of this activity is so vast that one person could hardly be familiar with more than a small portion of it. When we think of such things as magnetic mines, "degaussing", "radar", jet propulsion of aeroplanes, improvement of fuels for internal combustion, synthetic rubber, tanks, landing craft, bulldozers, camouflage, bombsights, "Fido", "Pluto" and a thousand and one things culminating in the development of the atomic bomb, we begin to realize how far the application of science to war has proceeded in these fields. In the domain of medicine we are more familiar with the developments that have taken place. The use of sulphonamides and of penicillin in the treatment of wounds and illness, the modern treatment of shock, the application of blood transfusion, the control of malaria, to quote but a few—these are stories whose romance is well known to us.

That the application of science to war has been reasonably effective is all the more remarkable when it is remembered that we have not yet completely shaken off the domination of ignorance amongst men in high military and political command. There is cause for thankfulness that the bad old days of the Crimean and South African campaigns are almost entirely gone. How otherwise could our troops have survived in New Guinea and Borneo? No tribute can be too great to the efficiency and devotion of the medical services in these areas, and to the enlightened leadership which allowed them to function. Nevertheless, it happens only too frequently that the scientific expert who knows how to perform a particular task is frustrated by a higher authority, fully charged with ignorance and its concomitant inferiority complex. For example, in World War I, although the importation of fruit had been recommended as essential by the scientific advisers to the British Board of Trade, the British Government showed clearly that it had not learnt the lessons in nutrition taught by Captain Cook in the eighteenth century. In Germany at the same time the importance of vitamins was not realized by government authorities, and the population was stricken with deficiency diseases and lowered morale on the home front, together with an enormous increase in the incidence of tuberculosis. Such instances could be multiplied a thousandfold.

---

[1] Read at the annual meeting of the Queensland Branch of the British Medical Association on December 14, 1945.

But now the war is over. The time has come to beat the swords of war into the ploughshares of peace. The problems of rehabilitation are before us, involving the reestablishment of men and women in useful civilian and peace-time activity. No phase of this problem is more important than the rehabilitation of science, by which I mean the harnessing of all our scientific knowledge to the problems of peace, and the enlargement of that knowledge by intensive research. How, then, can we achieve this objective? The answer is that it can be done only by an intelligent appreciation by political leaders in every country of the scope of science, in regard to both the fullness of its knowledge and the shortcomings of its ignorance which indicate the need for research. The inevitable consequence of this state of mind would be a determination to use science to the full for the betterment of mankind without fear of political consequences.

In making this plea one must admit that already much has been done; but in the field of medical science, and in Australia, much remains to be done. For example, the measures taken for the treatment of patients suffering from tuberculosis on the one hand, and for the eradication of tuberculosis from the community on the other, would be no credit to a prehistoric civilization which could not be expected to know any better. It is true that in Brisbane a sanatorium will shortly be built, and this is a step in the right direction. At present the compulsory notification of tuberculosis as an infectious disease has no value except from a statistical point of view. Surely the rôle of a government in this matter is to obtain the advice of its experts and to follow that advice—to provide facilities for a survey of the population, for accurate diagnosis, for adequate treatment, and above all for maintenance of the sufferer and his dependants as long as is necessary. In the matter of prevention, why should the infective patient not be isolated? How incongruous to allow an infective patient to broadcast tubercle bacilli throughout the community when the leprosy patient is compelled to submit to strict isolation! Surely it is just as culpable to allow tuberculous milk to be distributed, when we know how to prevent this risk. The presence of arsenic in fruit and vegetables rightly is a matter for strict and constant supervision; the danger of the tubercle bacillus in milk demands equal vigilance.

In many parts of Australia, mosquitoes cause considerable discomfort and ill-health. Filarial infection is more widespread than is generally realized, dengue epidemics are familiar to all of us, malaria is common in the north and occurs in non-tropical areas. Some day we may have to grapple with yellow fever. It is years now since the town of Toowoomba was persuaded to undertake intensive mosquito control and proved that such an idea was no more than practical common sense; but progress in this respect in other areas is still in its elementary stages. The amount of money spent on mosquito nets, mosquito spirals and sprays—all more or less ineffective as far as the main problem is concerned—would go far towards the cost of a thoroughly efficient mosquito control organization, and increased industrial efficiency and decreased loss of work and wages must also be regarded as an offset against the cost. Here again we have failed to use our proved knowledge to our immediate advantage.

Some day, perhaps soon, in this age of rapid transport, smallpox will descend on Australian communities in wholesale fashion. Outside that large number of discharged service personnel who have had the boon of compulsory vaccination, there is an enormous pool of susceptible population through which an epidemic of smallpox would rage with devastating effect, and yet there is no public conscience in favour of compulsory vaccination for civilians.

The problem of venereal disease in the community is one of major importance, and yet one in which a determined effort in the application of known methods of prevention and treatment would reduce the incidence to a minor figure. It only requires public opinion and political leadership to decide firmly enough its policy in such a matter to enable experts to carry out measures adequate for the purpose.

In the matter of "quack" and patent medicine advertising, untold harm is done to a long-suffering public by their pathetic belief in the printed and spoken word. The impact of the old familiar advertisement in the Press, and particularly of the newer blaring radio broadcast, is so powerful that it is easy to understand its effect on gullible people. But it is not so easy to understand why an intelligent government, with skilled advisers to inform it, will allow its citizens to be robbed in pocket and damaged in health by the application of these confidence methods. In this field there are signs of a movement towards better things. I refer to the censorship established by the Australian Press over medical advertising, and I have heard of the banishment of worthless preparations from the Queensland market by government activity. But much more remains to be done before we can claim that we as a community are using our knowledge for the public benefit.

Passing to the matter of research, we come to a field so vast as to be intimidating; yet science need not be overawed any more than General MacArthur was when faced with the problem of the Pacific. Every giant has chinks in his armour. The MacArthurs of science infallibly find them and proceed to topple the monster. What is needed everywhere is for governments to choose their MacArthurs and Mountbattens, their Montgomerys and Eisenhowers, and provide them with the means to carry out their campaigns. This, of course, needs money, and as finance is alleged to be the test of good government, criticism of apparently wasteful expenditure will lead to the downfall of any government, unless it can be shown that the money so spent provides a direct benefit in hard cash for the electors. The parliamentary candidate needs to be able to show such concrete things as schools and bridges and hospitals—to say nothing of financial grants to this section or that—which have been provided by himself and his party, and, moreover, he needs to be able to promise more and bigger and better things for the future. And whilst politicians and public give lip service to research in their more expansive moments, she remains a Cinderella when budgets are being framed.

I am aware that the British Government is making extensive plans for research, that in Australia the National Health and Medical Research Council and the Council for Scientific and Industrial Research are well-grown striplings, and that the Queensland Medical Research Institute is in its prenatal stage. All this is good; but in general, ten times the amount of money proposed could be well spent on scientific research and room would still be left for more.

And while we are speaking about money, let us not forget about men as the chief instruments of research. These are no ordinary men. They conform to no regular pattern. They are flowers of such rare blossom that it is wicked to allow them to waste their sweetness. Yet here in Australia we have examples of research men of proved merit condemned to spend their days in useful routine work, when all they need is the opportunity to go on with research work already planned. Imagine Melba in the village choir! Imagine Phar Lap in the plough!

Think of the research work to be done in medicine, and do not forget the need for research in pure science, in agriculture, in forestry, in engineering, and in almost every sphere of human activity—the gathering of knowledge and its application for the benefit of mankind.

One field of research requiring development is that concerned with hours of work in industry. So far this has always been a political matter; but the nation can no longer afford it as a political plaything. For every human activity there must be an optimum number of hours of work per week, when regard is paid to the welfare of the worker, the output of industry, the needs of the public and every other pertinent factor. This is a question that can and should be determined by scientific method.

In similar fashion the determination of the basic wage lies within the province of the science of mathematics rather than that of legal disputation. Basic needs in food, clothing, housing *et cetera* are known factors, and together make a total which, like a scientific law, is correct in all circumstances and under all conditions.

There is a phrase that is frequently quoted to the effect that the expert should be "on tap, but not on top". Such a saying may be true when experts such as the water diviner command high salaries in the departments by which they are employed, and when their advice is preferred to that of the trained and experienced geologist, or in the medical field when addle-pated and psychopathic pseudo-experts are placed in charge of important activities for which they are utterly unfitted. Appointments such as these arise because the true expert is on tap, but not on top. If we have to wait until general public opinion is sufficiently well informed in matters of this kind, many generations will have lived and died before the community gets the benefit of that scientific knowledge which is at present available to us.

We have an example of this attitude in the persistent refusal in Queensland to appoint as members of hospital boards doctors and nurses who may well be regarded as experts in hospital affairs and in matters relating to the care of the sick. I do not hold that hospital boards should be composed entirely of doctors and nurses (although such a plan might well be an improvement on the present set-up); in my opinion the composition of a hospital board would be vastly improved, in the public interest, by the appointment of doctors and nurses to it. But these, being experts, are unfit to be on top, they must merely be on tap. In these circumstances it is fortunate that such expert advice as is on tap usually commands a good hearing, though this is not always so. (I am reminded of the story of the dominating husband, who propounded to his wife an infallible formula for domestic harmony; he agreed that she should have her way whenever they were in agreement.)

In short, until such time as the conduct of human activities with a scientific basis is placed in the hands of men and women who by virtue of sound training and experience fully understand the problems with which they have to deal, we can expect nothing but retardation of normal progress in the rehabilitation of science.

But to go further in this matter of direction of the nation's activities, I submit that on the topmost rung of national affairs, there is a lack of the necessary leaven of science in the parliaments and cabinets of Commonwealth and States. The absence of a scientific outlook at this level is something that we can ill afford. We have little enough to boast about in the general level of intelligence—quite apart from scientific training—of those whom we honour with the duty of representing us in our national councils. The most that we appear to achieve is a group of people who, by virtue of greater or less experience, and by association with their subordinate technical advisers, blossom forth as experts in their own right, and begin to rush in with their own expert opinions where their subordinates have feared to tread. So it happens that men and women of science for all practical purposes are disfranchised, since their influence as electors is nil, their influence as technical advisers is minimal, and their influence in parliaments and cabinets is infinitesimal.

The responsibility for this state of affairs lies heavily on scientists themselves. It is their public duty to take an active interest in politics, to make themselves available as political candidates, however much they may shrink from the hurly-burly and from other sacrifiices entailed.

Thirty-three years have elapsed since the University of Queensland produced its first graduates, who now have attained some degree of maturity. How far have they been able to influence the public life of Queensland? On the face of it, very little. Yet it would be saddening to think that their unseen influence in the community had not been a source of great benefit. This, however, is not enough. We cannot expect intelligent government until a sufficient number of intelligent, well-trained men and women apply their faculties to the problems of government. We cannot expect a scientific outlook on scientific problems where there is no scientific training, and without these conditions no government can use science for the benefit of the governed to its fullest capacity.

Democracy has triumphed; let it go forward hand in hand with science towards a greater future for mankind.

◆

A SOCIOLOGICAL STUDY OF THE ABORIGINES IN THE NORTHERN TERRITORY AND THEIR EYE DISEASES.

By MICHAEL SCHNEIDER,
Major, Australian Army Medical Corps.

The Sociological and Psychological Background.

DISTRIBUTED over an area of about 500,000 square miles, comprising the Northern Territory, are some 15,000 full-blooded aborigines. A number estimated at about 6,000 and classified nomadic(1) have had very little contact with, and live outside of, European influence. Approximately 50% of these are to be found in Arnhem Land. Approximately a further 6,000 live in supervised camps, and the remaining 3,000 or thereabouts are in regular employment.

The nomadic group live the way of their ancestors. Free and fearless, they roam in their tribal country eking out an existence on what can be gathered from the soil, the plants and water, and by the chase. They have no knowledge whatsoever of food production and conservation. Those residing in supervised camps have become almost entirely dependent on the white man for their existence. At intervals a primitive urge to go "walkabout" compels them to disappear into the trackless wastes and bush, and to live the way of their ancestors. The third group, classified as in regular employment, occupy a social position somewhere between the nomadic and the supervised camp inhabitants. They are employed chiefly on cattle stations as cattle musterers, gardeners, goat herders, hewers of wood and drawers of water. In return for their services they are provided with a ration of flour, sugar, tea, tobacco, a little beef, and a lot of offal. At times, which in the northern areas correspond to the monsoonal wet season, many station managers send them into the bush to live in their primitive way, in country largely depleted of food and game owing to the invasion of the white man's cattle.

Native habitations are never clean, and those connected with cattle stations are extraordinarily filthy and squalid. Some three or four feet high, constructed of any available local material—boughs, odd pieces of iron sheets, bags, scraps of canvas, with the earth as a floor and the roof a sloping extension of the walls—they provide but slight protection against the elements. Scraps of food lie on the ground and adorn the forks of adjacent trees and shrubs or the roof of the wurlie. Innumerable lean, flea-infested dogs slink about uneasily. There is no pretence at sanitation, and water may be in a distant stream or billabong. In these surroundings the aborigines squat, or lie on dirty blankets or canvas or on the ground. Clothing if worn is never washed. In the dry areas flies are clustered over scraps of food, refuse, dogs and human beings alike, and add to the general misery.

In the nomadic state the natives move from one site to another in their search for food, and the elements cleanse the vacated sites.

During the last six or seven decades, more and more tribal hunting grounds have been alienated from the aborigines and occupied by pastoralists. The consequent competition between cattle and native animals has invariably led to a considerable reduction in the number of the latter. Spearing of cattle is denied to the natives, and with game becoming progressively more depleted, the erstwhile possessors of the land have been compelled either to seek help from the cattle station managers or to perish. This has produced a gradual drift from the independent free nomadic state to that of subservience to the white man. This drift has been considerably accelerated during the war by the army in its search for local labour.

As a nomad the aboriginal has a dignified bearing and behaviour indicative of freedom and independence. Once he has sold his birthright for a mess of potage by accepting the white man's dole, his character changes completely. His face betrays his servility and shame, and his eyes reveal his fears and doubts. Some few aborigines can adapt themselves to our world, but the vast majority fail hopelessly. This failure cannot be entirely ascribed to the white man's lack of interest, greed, intolerance or fears. Many teachers have attempted to educate them and missionaries to Christianize them, and at the present time unionists wish to enlist them under the same wage awards as white men.

It is the aboriginal himself who is unable to "make the grade". Not only is he unable to adopt our mode of life, but the mere attempt spells annihilation and extinction for him. Separated from us by countless generations of evolution, he has a simple, child-like mind which cannot assimilate what we have to offer. His mind has developed on an entirely different evolutionary scheme; it is a scheme in which his environmental economy is all-important. He has become a part of it. From his earliest years all his activities, physical and mental, have been related to it. The plants and trees, animals and birds, the fish and streams and waterholes, the rocks and hills, the clouds and rain, the wind, the stars, the sun and moon, all are of the greatest significance to him, not only in his sole practical avocation of food gathering, but still more so in his totemic existence. Of much greater importance to him than actual parents are his totemic forebears who created these natural objects. These natural objects form an integral part of his life and his conception of the future world. They are the basis of his health and happiness, his beliefs and his survival. He has struck a balance with nature in the same manner as our unique fauna and flora have done. When he is severed from this association, his psychological make-up never recovers, his joy and happiness disappear, his life becomes empty and purposeless, and he declines and degenerates into a pitiable outcast.

No matter how well-meant and willing our efforts, we cannot obviate this decay. The native simply cannot bridge the gulf separating his world from ours. This decay is not obvious to him. He begins by adopting a passive attitude to our world, and this is rapidly followed by indifference to his personal welfare, to his survival, and to the survival of his race. His lubra in consequence practises abortion and infanticide, neither of which is countenanced in the nomadic state, with perhaps the exception of multiple births, in which case the environmental economy may exact a relevant ruling. Furthermore, when he is in this stage of decay he seeks the few small pleasures which he associates with the white man—flour, tea, tobacco, calico, knives, hatchets and in some instances opium and alcohol. He accepts the comparatively poor food doled out to him and passively abandons the food, environment and social structure more suited to his existence. Being incapable of abstract thought, he cannot assess the comparative advantages and defects of the two states.

The white man's attitude to his black employees can be summed up by the statement that it is motivated by gain, but is otherwise one of complete indifference. This applies almost universally. Few cattle stations would be solvent but for the cheap source of labour supplied by the natives. All too frequently in return the native is not viewed as an indispensable servant, but is despised and spurned, and tolerated only if he is able-bodied and useful. This indictment must be modified in the case of many cattle owners who support non-working dependants of their black employees. Unfortunately, ill-advised legislation tends to penalize employers who adopt this humane practice.

This, then, briefly outlines the sociological and psychological background of the aboriginal in the Northern Territory. The impressions thus penned were formed during a sojourn of some twenty-one months in the area with Australian general hospitals. It was during the period when the Australian Army Medical Corps included the aborigines in its care. Excursions were made to various localities along the Stuart Highway (Alice Springs to Darwin), to the large rivers—Roper, Victoria, Daly, Adelaide and Katherine. Natives were examined where they were found, and in particular at the cattle, police and mission stations, and at Army native camps; occasionally also the roaming food-gatherer was examined.

Of the general diseases encountered very little will be mentioned, apart from the enumeration of those most commonly seen, with a note on their frequency rate. The eye diseases were noted more carefully.

General Diseases.

Yaws.

Yaws or serologically allied disease (Cleland⁽²⁾), has probably been with aborigines from time immemorial. Its incidence is remarkably high.

In a series of 38 consecutive cases among adults examined serologically in one month at an Australian general hospital, the blood of 36 yielded the Kline reaction. Of 11 infants and children examined in the same series the blood of two yielded the Kline reaction.

Leprosy.

Leprosy was introduced by Chinese indented labourers towards the end of the last century (Cook⁽³⁾). There are probably between 200 and 300 lepers amongst the northern tribes distributed almost entirely in the coastal regions (Kirkland⁽⁴⁾).

Malaria.

Malaria may have been introduced to the Arnhem Land coast by Macassars prior to its occupation by white men. Matthew Flinders wrote of "ague" amongst the natives on this coastline. Because of the absence of intertribal concourse it is highly improbable that the disease extended inland. It was probably introduced into the area between Darwin and Katherine by miners from New Guinea during the mining boom at the latter end of last century and the early part of the present century. Its incidence is not high. Benign tertian malaria is endemic, and occasional epidemics of malignant tertian malaria occur and are associated with a high mortality rate.

Hookworm.

In the higher rainfall areas north of the Roper River it is assumed, owing to the frequency of eosinophilia, that intestinal parasites must be common. Some 50% of subjects with eosinophilia pass ova of hookworm in the fæces (Andrews⁽⁵⁾). The disease is highly endemic along the coastline, around the northern coastal streams and in adjoining islands. It leads to a greater degree of morbidity and mortality than is generally realized. Apart from the deaths more directly ascribed to the anæmic condition itself, the profound secondary anæmia resulting from the infection renders many subjects prone to certain intercurrent diseases, to which they succumb.

Tuberculosis.

Pulmonary tuberculosis is found in a moderate number of cases—fewer than one would expect in a people with no knowledge of cleanliness and hygiene. Their outdoor mode of life may be a modifying factor. Extrapulmonary tuberculous infections are fairly common (Kirkland⁽⁶⁾). This may be ascribed to the fact that bovine tuberculosis is common amongst cattle in some parts of the Northern Territory, and natives almost invariably eat their food only partly cooked.

Eye Conditions.

The Conjunctiva.

One commonly finds collections of dark brown pigment in the conjunctiva of the lids and bulbs of adults. They tend to be localized into the larger accumulations in the areas normally exposed when the eyes are open. The caruncle and *plica semilunaris* sometimes share in this lavish distribution of pigment. Because infants and children are devoid of these collections of pigment, they must be classified as acquired. Occasionally a complete ring of pigment surrounds the cornea, usually but not invariably separated by a space of about one millimetre from the limbus. These rings are from 1·0 to 1·5 millimetres in width.

The Iris.

The colour of the iris is always dark, varying between chocolate-brown and almost black. Owing to lack of contrast between iris and pupil, it is difficult to define the pupillary edge in daylight.

The Fundus.

The fundi are almost invariably of a uniform slaty-pink colour, and chorioidal vessels cannot be seen. By contrast, the optic nerve head is apparently, but not actually, paler than in Europeans. Rarely, the fundus background is of a paler shade of pink or red resembling the colour in European eyes.

Visual Acuity.

Tested with the Snellen illiterate chart, the visual acuity as a whole approximates that of Europeans. Of a series of 48 subjects taken at random, 33 had a visual acuity of $^{6}/_{6}$ in each eye, and four managed $^{6}/_{5}$. A further six registered $^{6}/_{6}$ in one eye, and the remaining five had a visual acuity of less than $^{6}/_{9}$ in either eye. The impairment of vision in these had resulted from trachomatous corneal lesions. In the field, however, an aboriginal leaves us far behind in perceptive powers. He recognizes objects at many times the distance at which the white man can recognize them, and his ability to recognize and follow tracks and footprints leaves us bewildered. The extraordinary performances of black-trackers would be largely discredited and classified as figments of fiction, but that they are commonly accepted in legal practice. These feats are not due to any advantage in visual acuity with which the aboriginal is often credited, but are the result of training and careful observation and of the accurate interpretation of natural phenomena so closely related to his survival.

Refractive Errors.

Tests for errors of refraction were performed after routine instillations of homatropine and cocaine (2%). All eyes exempt from deep or extensive superficial corneal disease were hypermetropic. The largest error discovered was three diopters, and the majority varied between 0·25 and 1·5 diopters. Hypermetropic astigmatism varying between 0·5 and 1·0 diopter was seen in about 30% of subjects. In no instance was myopia found in an eye free from corneal disease.

Lid Diseases.

Chalazion is not uncommon and chiefly affects young adults. The incidence approximates that in whites. Blepharitis and hordeolum, however, are rare.

Naso-lachrymal Duct.

Chronic dacryocystitis in association with old, active, severe trachoma is not uncommon. In several instances it had produced a diverticulum of the sac in the lower lid, extending as far out as the external canthus. In one subject the distended sac readily held 2·5 cubic centimetres of saline solution. No evidence of rupture through the skin indicating acute dacrocystitis was found in any subject.

Conjunctival Disease.

Pterygium is somewhat rare. In a series of 574 subjects it was present in 17, and is therefore considerably less common than in a similar number of whites residing in the Northern Territory. It never encroaches more than about two millimetres on the cornea.

Mucopurulent conjunctivitis is prevalent amongst children, and is usually associated with profuse nasal discharge and a tendency to bronchitis. The organisms most commonly found on culture media were Koch-Weeks bacilli and pneumococci.

No attempt at cleansing the conjunctival sacs is ever made by the mother, and the discharge collects on the lashes in hard, stiff pencils.

The Cornea.

Variations in diameter of the cornea are similar to those in European eyes. *Arcus senilis* is not uncommon in the elderly. Owing to their outdoor life in thick high grass and bush, the natives in the northern areas occasionally present corneal abrasions.

The corneal lesions of trachoma will be dealt with under a later heading.

Uveal Disease.

The aborigines appear to be remarkably free from disorders of the uveal tract. No frank case of acute iritis or cyclitis was observed on external examination, nor was any evidence of chorioiditis found in the fundi of 86 subjects examined ophthalmoscopically. Iris atrophy with mydriatic-resistant pupils was evident in several lepers. Popular opinion among white people in the Northern Territory maintains that the natives are largely infected with gonorrhœa. In refutation of this common belief, it may be stated that no evidence of gonococcal eye disease was found, nor could gonococcal focal infection be suspected in the absence of uveal inflammation.

Ocular Manifestation of Yaws.

If it is assumed that infection by *Treponema pertenue* immunizes a people against infection by *Treponema pallidum*(7), then syphilis is not likely to be encountered in the aborigines, and it is probable that the following cases may be listed as presenting unusual manifestations of yaws.

Case I.—Aiden was aged about thirty years; he belonged to the Djappada tribe, in the Wyndham area. He had optic atrophy and central retinitis. He was admitted to hospital with right-sided hemiplegia of recent origin. The blood yielded both the Kline and the Wassermann reactions ("++"). An accompanying impairment of visual acuity (right eye, $^{6}/_{18}$; left eye $^{4}/_{60}$), also of recent origin, was due to optic atrophy, and in the left eye it was also partly due to central retinitis. The cerebro-spinal fluid was under normal pressure, contained globulin and ten cells per cubic millimetre, and yielded a paretic type of gold curve and a "doubtful positive" reaction to the Wassermann test. The patient intimated that his lubra and two children were well. Rapid reduction in the paralysis and some improvement in the visual acuity followed initial treatment by potassium iodide and mercury, later supplemented by "Novarsenobillon".

Case II.—Topsy, aged about twenty years, belonged to the Rimburrunga tribe in lower Arnhem Land. She had bilateral interstitial keratitis and keratoconus in the left eye. This lubra had uniform grey opacities in the deeper layers of the corneæ associated with deep blood vessels. In the right eye the grey area occupied approximately the upper half, the lower margin being convex downwards. The lesion in the left cornea resembled that in the right, but extended further down and occupied all but a narrow zone about 1·5 millimetres wide inferiorly. A considerable degree of keratoconus was superimposed in the left eye. The blood reacted to the Kline test ("++").

Case III.—Blind Maggie, aged about twenty-five years, belonged to the Nowla tribe in the Victoria River area. She had optic atrophy. She stated that she had been blind "long time" and that the blindness had "come slow". Her pupils were 5·0 millimetres in diameter and inactive. She was completely blind without perception of light. The fundi presented clearly defined, greyish-white disks, with no alteration in their level, the blood vessels appeared to be normal and the fundus colour was a little paler than is usual in aborigines. These conditions were combined with ataxia, disturbance of balance, flaccid arms and legs, absent deep reflexes and a positive ("+++") reaction of the blood to the Kline test.

Case IV.—An infant, aged about two months, belonged to the Ngullican tribe in the Roper River area. He had interstitial keratitis. The blood of both parents and the infant reacted to the Kline test. Both corneæ of the child were opaque and of a generalized pale-grey colour, amongst which numerous rounded, yellowish-grey plaques were distributed. The subsequent history is not known, as the family disappeared silently and suddenly into the bush soon after treatment was initiated.

Cases III and IV have been described by Binns[8].

Trachoma.

As may be expected in a people living in close personal contact with each other, without the slightest notion of personal cleanliness and hygiene. trachoma has a remarkably high incidence. Of a total of 574 subjects, 520 (91%) presented evidence of trachoma in one of its stages.

The most remarkable feature of the disease in the Northern Territory is the extraordinary influence that climate bears on its severity. In the southern areas of the Northern Territory, rarely free from wind and dust, the disease is severe. In the northern areas, comparatively free from wind and dust, the disease is mild and complications are rare. The incidence rate is practically identical in the two areas thus subdivided climatologically.

The bush fly *Musca vetustissima* is so prevalent in the interior dry areas that outdoor life is a most trying experience. The flies have a predilection for one's eyes and are most persistent in their endeavours, and it becomes necessary to wipe them from one's lids times without number. The aboriginal placidly ignores flies, and one usually finds a group clustered about his eyelids. In the northern areas these flies are practically absent—a few are seen in the winter months, but never in large numbers.

The incidence rate of trachoma is practically identical in the fly-ridden and the fly-free areas, and one may therefore conclude that flies play a minor role, if any, in the dissemination of the disease.

The chief vehicle of transference of the organism of trachoma in the aboriginal is almost certainly the human finger. It is a common experience to observe a lubra wiping the secretion from her eyes with her fingers, and a moment later repeating the manipulation on her child's eyes, wiping any excess on to some part of her body or thighs.

Corneal Conditions in Trachoma. In both severe and mild cases of trachoma in the aborigines, one frequently finds a crescent-shaped infiltration or degeneration of the cornea contiguous with the sclerotic. The lesions appear during the stage of healing and are apparently permanent. They have a sharply defined border, are greyish-white to olive-brown in colour, and may contain small collections of dark brown pigment and both superficial and deep blood vessels. Their length varies from 7·0 to 12·0 millimetres, they taper at each end, and the diameter in the middle varies from 1·0 to 3·5 millimetres. They are most usually situated on the upper border of the cornea, but may occur on the upper and lower borders, or occupy the whole circumference. Being contiguous with the sclerotic and opaque, they distort the outline of the cornea to superficial examination, so that if they are present above and below, the cornea appears to be horizontally oval. Irregular mantles of pannus may coexist and extend beyond the margins of these degenerated areas. The lesions were found in 101 (22%) of 463 sufferers from trachoma. In 11 eyes the crescents contained Herbert's pits—clear, circular areas varying from one to two millimetres in diameter, most of them discrete but others merging with neighbouring pits. They varied in number from a solitary pit to as many as nine, and if they were multiple they described an arc in the area of crescentic degeneration. In two subjects a narrow pigmented line described an arc in the crescentic area.

Severe Trachoma. Severe trachoma is found in the dry, dusty, windy interior country. It conforms to the classical description of the disease, in that it begins in early childhood and terminates with the grave, producing more suffering than any other disease, and is accompanied by progressive impairment of vision and not infrequently blindness. Of a series of 140 consecutive subjects examined, 11 were blind in both eyes, 13 were blind in one eye, 41 presented corneal opacities which considerably impaired the visual acuity, and 31 had pronounced entropion which in 25 instances had resulted in trichiasis. *Phthisis bulbi* was found in five eyes. In nine cases there was an associated chronic dacrocystitis with considerable enlargement of the lachrymal sac, and symblepharon was present in two subjects. Pannus, visible to the naked eye, was present in all severe active cases of trachoma, and in two cases the grey mantle extended over the whole cornea. History taking, apart from its amusement value to a bystanding colleague, is usually valueless. An aboriginal cannot think in abstract terms, and time is of no significance to him. When he is questioned, his averted face remains expressionless until he discovers whether one wishes him to reply in the affirmative or negative, and then his desire to please outweighs his respect (if any) for scientific investigation.

The following will serve as illustrative cases of severe trachoma.

Judy, aged about fifty-five years, belonged to the Wadamar tribe. The conjunctivæ of her lids were red and considerably swollen and speckled with areas of pigmentation. Scarring in irregular patches coexisted with small collections of follicles. Both lachrymal sacs contained a large quantity of foul-smelling pus, which welled from the inferior puncta on pressure over the enlarged sacs. Her right eye was shrunken and the edge of its calcified lens projected some two millimetres from an anterior perforation of the cornea. (The lens was readily removed with a blunt curette.) Her left eye presented early senile cataract and much pannus.

January, aged about twenty years, belonged to the Ngeinman tribe. A series of well-defined scars on his throat indicated an ineffectual attempt at suicide. Both his eyes presented severe, active trachoma with many large follicles on greatly swollen, hyperplastic and reddened conjunctiva. Grey mantles of pannus with numerous blood vessels extended downwards to cover half of his corneæ. In the upper area occupied by pannus in each eye was a greyish-white crescent, tapering at both ends, about 7·0 millimetres long and 3·5 millimetres wide in its middle. The crescent in the left eye contained a solitary Herbert's pit.

Joe, aged about seventy years, belonged to the Billi-ngarra tribe. His trachoma was characterized by a few follicles, some scarring and much swelling and redness of the conjunctiva of the lids. He had entropion and trichiasis. His left eye was quite blind from a dense white opacity of the whole of the cornea. His right cornea presented a dense central scar containing a horizontal pigmented line. The visual acuity in this eye was poor. An optical iridectomy would help Joe.

Charlie, aged about seventy-five years, belonged to the Ngeinman tribe. He was completely blind from trachoma. Both corneæ presented dense opacities undergoing calcareous degeneration, and blood vessels. His lids were distorted, with the production of trichiasis, and follicles, areas of epithelial hyperplasia partly pigmented, and irregular scars on his tarsal conjunctivæ were present.

Charlie was conducted by Joe (mentioned above) in the manner invariably used by natives when leading their blind. Joe's visual acuity was just sufficient for him to avoid large obstacles and pitfalls, and he led Charlie at the end of a stout cudgel some five feet long. They proceeded in single file, one at each end of the stick held loosely and horizontally by their sides.

Mary Anne, aged about forty-five years, belonged to the Ngongalli tribe. Her trachoma had produced entropion, distichiasis and trichiasis, and isolated scars on the corneæ. She was the only native examined who practised epilation for the relief of trichiasis. She did this by pulling the lid away from the eyeball, and then removing the offending lashes between the index finger and thumb of the same hand. Although performed without the aid of a mirror or an instrument, the procedure was highly successful, in that no lashes were rubbing on her corneæ, although many were projecting about half a millimetre from the lid.

Nellie, aged about sixty years, belonged to the Djamindjang tribe. She was blind in both eyes from trachoma. The right eye was affected by *phthisis bulbi* and the left by keratectasia involving the whole of a densely opaque cornea. Trichiasis involved both upper and lower lids, and had produced spastic entropion of the lower lids.

Mild Trachoma. As has been previously mentioned mild trachoma has a climatological distribution, and in general belongs to the comparatively wind and dust free areas north of the Roper River. The incidence rate is practically identical with that of severe trachoma—about 90% of all persons. None of them complained even of discomfort, although this may be ascribed to the natural stoicism of the natives. In no case was photophobia, excessive lachrymation or active corneal ulceration present. Slight ptosis was observed in a fair proportion of subjects with pannus and follicles. Pannus was present in all with follicles and epithelial hyperplasia. Most of the children had early trachoma manifested by pannus, red swollen conjunctiva of the lids containing follicles, and a little hyperplasia. Fine cicatrices were found in those who had attained the age of ten or twelve years, and adults presented little evidence of preexisting trachoma apart from fine scarring of the tarsal conjunctiva, and in a large proportion of cases the areas of crescentic degeneration previously described.

The following will serve as illustrative cases.

Biblingi, aged about thirty years, belonged to the Ngandi tribe. Fine scars were irregularly distributed over the tarsal conjunctiva of both eyes. Pannus could not be seen with the naked eye, but with a × 10 loupe small blood vessel loops could be followed on to the corneal epithelium. No other abnormality was detected about his eyes.

Cobiyaryack, aged about twelve years, belonged to the Nungabuya tribe. He presented slight ptosis, and a few small follicles were present in a slightly reddened area over the tarsal conjunctiva of each eye. Small areas of scar tissue were distributed irregularly. A crescentic grey area of corneal degeneration was present on the upper border of each cornea; each was about 7·0 millimetres in length and 2·5 millimetres wide in the centre, and tapered at the ends.

Ironstone, aged about thirty years, belonged to the Rimburrunga tribe. Faint scarring, which produced a pale bluish discoloration of the tarsal conjunctiva in each eye, and a series of greyish-white crescents of degeneration in the peripheral area of the cornea, were the only remaining evidence of previous trachoma.

Paddy, aged about twenty-five years, belonged to the Melville Island tribe. His tarsal conjunctiva had become scarred, with the production of an ivory-white, smooth, glistening surface. There was no distortion of the lids or entropion. His corneæ presented a few fine invading blood-vessel loops above, and in the left eye he had an olive-green crescent of corneal degeneration about nine millimetres long and two millimetres wide in its middle.

Don, aged about twenty years, belonged to the Millingimbi tribe. His lashes were unusually long. The conjunctiva of his upper lids was reddened and contained small irregular areas of cicatrization. The corneæ appeared clear.

Treatment of the Diseases of the Aborigines.

As has previously been intimated, the natives of the Northern Territory are readily divisible into three sociological groups: (*a*) the supervised camp group, (*b*) those in regular employment, and (*c*) the nomadic group.

The inhabitants of supervised camps, largely treated with contempt by their supervisors, with no hope of ever being accepted in the white man's society, and with no pride in their ancestry, are rapidly diminishing in numbers. Their medical problem is a self-terminating one—they are doomed to early extinction. Medical care in the meantime should be, and actually is, based on that provided for white communities including treatment in hospitals. A similar attitude is adopted to those employed on cattle stations in the vicinity of towns.

As for the nomadic group, and those employed on outlying cattle stations, we cannot approach these too cautiously. On the outlying cattle stations a semblance of the black man's primitive patriarchal family life is still maintained, and for that reason these natives should be treated in the same manner as the nomadic people. It is for the latter, however—the nomads—that a special plea is made. Previous experience shows us clearly that there is no surer way of exterminating them, even if we cure them individually of their physical ills, than by collecting them in the vicinity of white people. They cannot be separated from their highly adapted primitive existence—from the only world they know—and survive. There is no alternative. This factor must form the basis of our approach to them, or better by far that we leave them alone. Therefore as a general principle treatment in hospital cannot be countenanced. These remarks do not apply to the comparatively small numbers of lepers and those suffering from tuberculosis, who must be segregated.

If the nomadic people in Arnhem Land, estimated at some 3,000 individuals, were left completely to themselves; if we strictly excluded not only pearlers and beachcombers, who under the pretext of seeking water land on its shores to satisfy their lust, and the "poor whites" roaming in the area, but also all manner of teachers and missionaries, often well-intentioned but ill-informed; if these were excluded, there is no reason why the aborigines should not survive through hundreds of years. They have done so through countless forgotten ages, and it is only when we thrust ourselves upon them with our "civilization" that they leave their virtuous primitive life, adopt our vices, and end miserably.

All missionaries in the Northern Territory cannot be included in this generalization. A few intelligent men do exist—teachers in the true sense, who do not allow religious zeal to subjugate their respect for aboriginal customs and habits. Fully cognizant of the havoc and destruction created by fellow-missionaries, these few stand preeminent in their helpful, unselfish and commonsense attitude. They rate physical welfare as at least equal in importance with spiritual welfare, and realize that the uncontaminated black man is more virtuous than the white.

The natives in Arnhem Land live in barren, inhospitable country, which fortunately for them has not been inviting enough for white men to occupy. How long this state of affairs will continue is unpredictable. Even now certain ignorant and misguided people maintain that lack of development of Arnhem Land is one of the reasons why the Northern Territory has failed economically in the past. They have formulated the most extraordinary and fantastic schemes for its so-called development. Let us call a halt to these dreamers and at the same time preserve the aboriginal in his last stronghold. Arnhem Land cannot be utilized economically by the white man, so why destroy the black man in it?

The problem confronting us, therefore, is primarily, the prevention of their racial extinction, and secondarily, the treatment of their diseases. The former is dependent on wise and humane administration; the latter presents no insuperable difficulties. The medical care of the aborigines who live the primitive food-gathering, patriarchal family existence could be maintained by mobile medical units. A mobile medical unit would consist of a medical officer, with special training in the treatment of trachoma and aboriginal diseases, a guide-interpreter, with special knowledge of native customs and habits, for each district, and an orderly. The unit would have at its disposal two motor vehicles, one of which would be fitted out with the necessary medical, surgical and laboratory equipment for the diagnosis and treatment of the diseases commonly found. It would visit suitable areas in the reserves in rotation. The unit could control yaws, malaria, trachoma and probably hookworm, determine the diagnosis of leprosy and tuberculosis, act in an advisory capacity on matters of personal hygiene and cleanliness in fixed native encampments, and indicate the mode of procedure for treatment of disease for the periods intervening between visits. This approach would not "detribalize" the aboriginal or interfere with his mode of life, and the medical officers would receive the confidence of the natives, who would readily submit to treatment. The white custodians of aborigines would also welcome it, and their active cooperation would be assured.

Treatment in hospitals for natives other than those who had been "detribalized" would, as has been previously mentioned, spell death and destruction to them. Quite apart from this aspect, there are other factors that would render such a plan infeasible and ineffective. The large number of sufferers from yaws and trachoma alone could not be coped with by any transport unit over the trackless areas involved, nor would air transport be adequate; and the aborigines, with their innate fear of any other than their tribal grounds, even if successfully collected, would quietly take to the bush and disappear.

A modification of the approach that a mobile medical unit would employ, and more suited to the difficult terrain and vast distances, was in force prior to the outbreak of the war against Japan, through the medium of the Aerial Medical Service. This service visited the cattle, mission and police stations at regular intervals. The large number of sufferers from the complications of trachoma alone indicates that the service had insufficient medical officers at its disposal. Its activities will be enlarged in the post-war period, more medical officers and more aircraft will be engaged, and it is anticipated that this service will be able to cope with the large number of sick natives in the various stations under its supervision.

Summary.

1. The sociological and psychological background of the aborigines in the Northern Territory is briefly outlined.
2. Their common diseases are enumerated.
3. A survey of their eye conditions and diseases is presented.
4. The prevalence of trachoma is stressed.
5. The climatological influence on the severity of trachoma is pointed out.
6. The frequent occurrence of a crescentic-shaped degeneration of the cornea in trachoma is mentioned, and the macroscopic appearance is described.
7. A note on the mode of transfer of the infecting organism of trachoma is tendered.
8. The theory that flies act as vectors of trachoma is discredited.
9. Suggestions concerning a medical officer's approach to the aborigines are outlined.
10. The formation of mobile medical units in the Northern Territory is recommended.
11. A plea that Arnhem Land be maintained as an inviolate aboriginal reserve is added.

Acknowledgements.

I am indebted to the Director-General of Medical Services of the Australian Military Forces for permission to publish this paper. Appreciation is expressed for the helpful criticism of Lieutenant-Colonel W. B. Kirkland and Chaplain W. S. Chaseling. My thanks are due to many kind and hospitable white residents on the cattle, mission and police stations in the Northern Territory, who made the investigation work both simple and pleasant.

References.

(1) "Official Year Book of the Commonwealth of Australia", Number 34, 1941, page 307.

(2) E. C. Black and J. B. Cleland: "Pathological Lesions in Australian Aborigines, Central Australia (Granites), and Flinders Range", *The Journal of Tropical Medicine and Hygiene*, Volume XLI, 1938, page 69.

(3) C. Cook: "Epidemiology of Leprosy in Australia", Commonwealth of Australia, Department of Health, Service Publication Number 38, 1927, page 28.

(4) W. B. Kirkland: Personal communication.

(5) J. Andrews: Personal communication.

(6) W. B. Kirkland: Personal communication.

(7) "Manson's Tropical Diseases", Eleventh Edition, 1942, page 634.

(8) R. T. Binns: "A Study of Diseases of Australian Natives in the Northern Territory", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1945, page 421.

TRAUMATIC ARTERIO-VENOUS ANEURYSM OF THE FEMORAL BLOOD VESSELS.

By GEORGE C. V. THOMPSON, F.R.C.S. (Edinburgh),
Surgical Registrar of a Royal Australian Air Force Hospital.

TRAUMATIC arterio-venous communications most frequently result from wounds of an artery and an accompanying vein by a penetrating projectile of the nature of a rifle bullet or a bomb fragment, or as a result of stab wounds. Thus it is to be expected that larger numbers of arterio-venous aneurysms will occur in war-time and that opportunities will be presented for the study of their clinical features.

The common sites for arterio-venous communications of traumatic origin are in exposed situations in which an artery and vein are in contact over long distances. It is not surprising that the most common vessels which sustain injuries resulting in the development of arterio-venous aneurysms are the femoral, axillary, brachial, popliteal, carotid and subclavian vessels, the frequency being somewhat in that order. The most commonly encountered arterio-venous aneurysms are those of the femoral vessels.

The type of communication between the artery and the vein depends upon the degree of wounding of the vessels, the amount of perivascular hæmatoma formation and the relative positions of the arterial and venous wounds. A small foreign body passing between an artery and its accompanying vein may cause only a small puncture of both artery and vein, with a minimal extravasation of blood into the tissues, because the proximity of the openings allows the blood extravasated from the artery to follow a pathway of little resistance through the venous puncture rather than to dissect tissue planes. A fistula is thus established without the formation of an intervening aneurysmal sac; either this may be a direct communication between artery and vein or an arterio-venous fistula united by a small channel may result. Such communications constitute an aneurysmal varix. If the vascular damage is greater than this, or if the wounding of the vessels is such that the openings of the artery and vein are at the same level although not contiguous, as may happen in tangential wounds of blood vessels, blood is extruded into the tissues and forms a hæmatoma, which finally communicates with the venous opening. The organization of the track thus formed gives rise to an arterio-venous communication in which an aneurysmal sac is an integral part. This constitutes an arterio-venous aneurysm.

Reports of Cases.

In a recent case it was most instructive to watch the formation of an arterio-venous aneurysm during the first few days after injury to the femoral vessels. Such a patient (Case I) was recently examined after he had sustained a gunshot wound of the femoral region; a large thigh hæmatoma developed, which was rapidly reduced in size, and at the same time the classical signs of an arterio-venous communication became evident. The clinical condition and progress of this particular patient will be briefly quoted.

CASE I.—On November 9, 1944, B.N.M., an officer of the Royal Australian Air Force, was injured by a rifle bullet which penetrated his left thigh in the region of the apex of the femoral triangle of Scarpa. He was examined almost immediately; at this time his pulse rate was 60 per minute and his blood pressure was 120 millimetres of mercury, systolic, and 70 millimetres, diastolic. Three hours later, on his admission to hospital, examination revealed that the entry wound was a quarter of an inch in diameter and was situated three and a half inches below Poupart's ligament, just lateral to the femoral artery. A slightly larger exit wound was situated in the gluteal region, two inches from the mid-line of the body. The pulsations of the femoral and popliteal arteries were readily palpable, but pulsations of the posterior tibial and *dorsalis pedis* arteries were palpable only with difficulty. There was a large hæmatoma over the thigh, which rapidly subsided during the next twenty-four hours.

Two days after the accident a pulsation and thrill were noticed for the first time over the femoral artery. These features extended as far as Poupart's ligament and were associated with an audible bruit; but no obvious localized pulsating mass was recognizable as a distinct entity, apart from the generalized effusion of blood into the thigh muscles and tissues. Neither at this nor at any subsequent time did venous engorgement or œdema of the leg appear.

During the next few days the thrill, pulsation and bruit became more localized over the femoral region, and the thrill now actually extended proximal to Poupart's ligament. Proximal compression of the artery by digital pressure over its course at Poupart's ligament controlled the thrill, but unfortunately no record of the effect on pulse rate or blood pressure was kept. No undue general symptoms or signs of cardiac involvement were noted. About five weeks after injury some deficiency of circulation in the foot occurred, with transient colour changes.

On October 31 exploration of the area was carried out under general anæsthesia, and a communication of the aneurysmal type was found between the femoral artery and vein immediately distal to the origin of the *profunda femoris* artery. Ligation of the artery and vein proximal and distal to the site of communication was carried out, followed by excision of the aneurysm. After operation the foot became cold, and cyanosis of the toes and forefoot was pronounced. This condition lasted for a week, at the end of which time the foot became warmer and pulsations reappeared in the posterior tibial artery. Within a month of operation this officer had begun walking and after another month's convalescence he could play sport and walk moderate distances without undue discomfort. Four months after injury a medical board considered that he "had recovered all normal usage of the leg and was fit for duties in the capacity of a pilot".

The arterio-venous fistula having been established, there gradually appear changes in the limb circulation, in the calibre of the vessels, and in the thickness of their walls, and especially in the lower extremity, varicosity of the superficial veins occurs. The pathological changes in the vessels and in the blood flow have been described by Horsley and Bigger.⁽¹⁾ There is considerable difference of blood pressure between artery and vein, resulting in rapid flow through the fistula and very little prospect of spontaneous cure by clotting. The ease of blood flow through the fistula allows a proportion of the blood in the limb to be returned to the heart without taking part in the limb nutrition, and eventually may cause cardiac enlargement. Changes occur in the artery, which becomes smaller distal to the fistula, owing to the reduced blood flow, and dilated proximal to the fistula, so that it is able to convey the blood needed to nourish the limb and to accommodate the extra blood short-circuited back to the heart. The veins become dilated distally as far as the first valve, and proximally as far as the *vena cava* or even the heart. If the venous valves become incompetent, varicosity of the veins ensues, the nutrition of the limb suffers, and ulceration or eczema may supervene. As a result of their dilatation the veins become thickened, so that it is difficult from examination of their wall at operation to distinguish artery from vein. These features are more evident in long-standing cases. This was recently seen in the case of a patient who had an arterio-venous aneurysm of the femoral vessels of three years' duration. The clinical history of this patient (Case II) is also briefly recorded.

Case II.—On July 22, 1942, W.G.M., a Royal Australian Air Force corporal, was accidentally injured by a 0·22 rifle bullet, which entered the medial aspect of his left thigh and was recovered from the region of his left anterior superior iliac spine at operation under local anæsthesia on the same day. At this time he had a certain amount of extravasation of blood in the medial aspect of his thigh, and during convalescence a swelling was noted in the groin, which had an "emphysematous" sensation to palpation. No record was made of any damage to the main blood vessels, nor was aneurysm suggested, although it appears probable that early features were making themselves evident at this stage. The patient did not report for medical examination for two years, at which time he fainted on duty. The medical records state that examination revealed no abnormality except for varicose veins in his left leg.

On April 25, 1945, the patient reported at the unit sick parade on account of swelling of his left ankle and dilated veins in his left leg. He said that the veins of the leg had gradually become more prominent since the date of his accident and had been accompanied by the slow development of œdema. Clinical examination revealed dilatation of the superficial veins below the knee, with considerable tortuosity accompanied by "pitting" œdema and a small ulceration surrounded by low-grade cellulitis at an area of recent bruising. In the upper half of the thigh a thrill and bruit were present, localized over the femoral vessels, but no aneurysm could be palpated. The thrill and bruit could readily be followed to a point three inches proximal to Poupart's ligament. The pulse rate was 80 per minute; the systolic blood pressure was 170 millimetres of mercury and the diastolic pressure 70 millimetres. The pulse was of the typical "water-hammer" or Corrigan type. The apex beat of the heart was displaced laterally, being palpable five inches from the mid-line of the sternum. Control of the blood flow through the arterio-venous communication by pressure over the femoral artery resulted in a fall of pulse rate to 70 per minute, and investigation of the blood pressure revealed a less pronounced pulse pressure; the systolic blood pressure was unchanged, but the diastolic pressure rose to 110 millimetres of mercury. An X-ray examination of the heart showed slight enlargement in all cardiac diameters; this confirmed the findings on clinical examination, as well as revealing engorged pulmonary blood vessel markings throughout the lung fields.

On June 7 operation on the femoral arterio-venous aneurysm was performed by a consultant surgeon. After control of the vessels, the aneurysmal communication between the femoral vessels was found to be just distal to the origin of the *profunda femoris* artery. Ligation of the femoral artery and vein proximal and distal to the aneurysmal area was followed by excision of the sac after several small communicating vessels had been ligated and divided. A small blood transfusion was given, as no evidence of cardiac embarrassment had occurred as a result of ligation. Immediately after operation the pulse rate was 76 per minute, and the systolic blood pressure was 130 millimetres of mercury and the diastolic pressure 84 millimetres.

Since operation little variation has occurred in these figures. There were no circulatory changes in the foot after operation, the *dorsalis pedis* and posterior tibial arteries being palpable at all times. The heart size rapidly decreased, and one week after operation the apex beat was four and a quarter inches from the mid-line. One month after operation the heart was clinically normal, the apex beat being in the normal situation. On July 10 X-ray examination of the chest revealed a decrease in the size of the cardiac shadow compared with the film taken prior to operation, and considerable reduction in the congestive changes in the lung fields. At this time the patient was considered fit for discharge from hospital to have a short convalescence prior to return to his normal duties.

Discussion.

It will be noted that the clinical signs and symptoms of a femoral arterio-venous aneurysm, as exemplified by the two cases quoted, differ according to the length of time that has elapsed since the fistula was established. An important feature to remember is that the signs of an arterio-venous aneurysm may appear immediately after the accident, or they may not become evident until after the lapse of some days or weeks. In the first case quoted the signs did not become manifest for a day or so. This may be explained by the fact that absorption of the perivascular hæmatoma allows signs of the fistula to be found or that the channels become more patent as swelling subsides. To the signs of the local condition are added general signs and symptoms in long-standing cases or in cases in which the fistulous openings are very large. At the same time nutritional changes in the limb may be evident.

When a wound has occurred in the region of the femoral vessels, a careful study of the exit and entry sites will often lead one to suspect injury to those vessels. In all such cases a careful examination should be made at that time, and on several subsequent occasions, to exclude vascular damage and the development of an arterio-venous connexion. The formation of a large hæmatoma in the soft tissues does not necessarily occur in those instances in which a contiguous artery and vein are injured. The venous opening permits rapid return to the circulation of extravasated arterial blood, and so tissue distension is prevented from occurring. According to the nature of the fistulous communication, a swelling may or may not be palpable. If the fistula communicates through a large sac, a swelling may be palpable. Such a swelling, if present, is usually pulsatile; but in the majority of femoral arterio-venous aneurysms the sac is too small to be detected on clinical examination.

The two most characteristic features of an arterio-venous aneurysm are palpable thrill and an accompanying loud characteristic bruit, which is probably most aptly described as of a "machinery" type. The thrill is pronounced over a considerable distance along the course of the vessels concerned in the fistulous communication. The nature of the bruit is such that it is continuous throughout the whole cardiac cycle but is accentuated in systole. In the cases encountered the prominent feature noted was that the thrill had its maximum intensity a considerable distance proximal to the site of the vascular injury, and although the femoral injury was below the origin of the *profunda femoris* artery, the site of maximum thrill and pulsation was proximal to Poupart's ligament along the course of the external iliac vessels. It appeared as if the most obvious thrill was on the venous efferent limb from the fistulous opening. The distal transmission of the thrill was less pronounced than its proximal projection. The vascular bruit was heard most readily over the vessels and was maximal over the area of greatest thrill and at the fistulous site. The bruit had extensive transmission in both directions, and could be heard not only over the feet, but also along the vessels proximally for long distances. The thrill and bruit are continuous with systolic accentuation, but both can be abolished by compression of the femoral artery proximal to the site of the arterio-venous aneurysm.

At the same time, it will be noticed that as a result of the compression there is a reduction in pulse rate, a lowering of the systolic blood pressure (often after a rise for a couple of beats, in experimental studies), or a rise of the diastolic blood pressure. This has been designated as Branham's sign; but Holman⁽²⁾ credits Nicholadoni with observing as early as 1875 the slowing of the pulse rate on arterial compression proximal to the vascular communication.

Other local features are signs of venous dilatation and back pressure in the legs, with large dilated varicose veins, œdema of the legs and trophic tissue changes, giving rise to eczema and ulceration. It is rare for pulsation to be noticed in the veins of the limb distal to the fistula. The œdema of the legs rapidly disappears when the part is elevated.

The deficient circulation of the leg accompanying some arterio-venous aneurysms gives rise to symptoms of fatigue after exercise, in addition to œdema and to trophic changes. Actual gangrene or ischæmia are, however, rare sequelæ.

In long-standing femoral arterio-venous aneurysms, as in other peripheral aneurysms of long duration, and provided that the fistula is sufficiently large, there develop various signs and symptoms of cardiac embarrassment. Symptoms such as dyspnœa, tachycardia on exertion, faintness and a sense of cardiac discomfort are complained of, and ultimately, the condition progresses until signs of cardiac enlargement appear or even death may ensue. In occasional cases cardiac failure rapidly supervenes, as was described by Mason, Graham and Bush⁽³⁾ and quoted by H. Bailey.⁽⁴⁾ The rapidity of the return of the heart to normal size and of the pulse pressure to normal are striking cardio-vascular features after operation for closure of the fistula. The cardio-vascular changes occurring after an arterio-venous fistula have been tabulated by Tarnower, Lattin and Adie.⁽⁵⁾ In brief, the effects are: (i) acceleration of the pulse rate; (ii) elevation of the systolic blood pressure and fall of the diastolic pressure; this feature gives rise to the water-hammer pulse, capillary pulsation and exaggerated pulse pressure; (iii) increased cardiac output with decreased stroke output; (iv) engorged pulmonary vessels; (v) increased circulating blood volume; (vi) cardiac enlargement; (vii) changes in the electrocardiographic tracings; (viii) increased venous pressure and circulation time, when cardiac decompensation occurs.

The circulatory effects are dependent upon the size of the fistula, the size of the blood vessels involved, the distance of the fistula from the heart and the volume and force within the artery which is short-circuited, as well as upon the age of the patient and the presence or absence of preexisting cardiac disease.

A careful consideration of the signs and symptoms makes the diagnosis of arterio-venous aneurysm of the femoral or other peripheral vessels moderately certain in nearly all cases. The differential diagnosis from a simple aneurysm, however, is extremely important from the point of view of treatment. Ligation of the artery is all that is required for the cure of a simple aneurysm; but this not only fails to relieve the symptoms or produce a cure of an arterio-venous aneurysm, but may actually precipitate gangrene of the limb. The main difference between the two conditions is, firstly, that the arterio-venous aneurysm has a continuous thrill and bruit, with systolic intensification, while an aneurysm shows these features in systole only; and, secondly, digital compression of the artery proximally slows the pulse rate and affects the blood pressure in the presence of an arterio-venous fistula, but not in the case of a simple aneurysm.

Treatment.

The problem of treatment of arterio-venous aneurysms involves a discussion of the nature of any operative procedure and of the time at which operation should be undertaken. It is generally agreed that, as only a small number of arterio-venous fistulæ close spontaneously, operation is indicated, but that, except in a few cases in which early repair may be attempted or in which cardiac failure is developing, operative procedures should be deferred until an efficient circulation has been established by the collateral blood vessels of the limb.

Holman,⁽⁶⁾ who has extensively studied arterio-venous fistulæ, discusses the treatment of these conditions according to whether the fistula is recent or of long standing. In a case in which an injury to a large artery is suspected, bed rest is indicated. If an enlarging hæmatoma of the limb threatens the blood supply of the extremity, immediate operation is indicated. The procedure adopted is the temporary control of the affected vessels and evacuation of the hæmatoma; in the absence of infection the vein is ligated, and after the edges of the arterial rent have been trimmed, suture of the artery is the ideal procedure. It is found that this is not possible in many cases, and ligation of the artery has to be carried out. The collateral circulation is encouraged by blood transfusion, and in some cases sympathectomy has been recommended. The use of blood transfusion needs careful consideration, however, since closure of the fistula, in any but the most recent cases, increases the circulating blood volume and causes further cardiac embarrassment.

If diagnosis is delayed and primary treatment has not been adopted, operation is postponed until an efficient collateral circulation has been established. This period of delay should be six weeks at least, and perferably about three or four months. At the end of this time, not only has the circulation had time to establish an adequate alternative route, but the local trauma has subsided, the vessels have healed, and dissection is less difficult than in the indurated tissues. The development of progressive cardiac symptoms or any local complication may necessitate operative interference at any time. In the event of cardiac insufficiency, bed rest and frequent digital compression of the fistula are recommended before operation. Adequate post-operative rest is also indicated in these cases, to allow the heart to compensate for the increased diastolic pressure which results from the closure of the fistula, and which in some cases may cause some further cardiac embarrassment, requiring venesection for its relief. The normal effect of closing the fistula, however, is to open up the capillaries of the collateral circulation in a manner similar to that observed in limbs after ligation of a main artery when a blood transfusion is given to the patient. In this condition the closure of the fistula makes available the blood previously short-circuited through the fistula for use in the general circulation.

The operation performed on these arterio-venous fistulæ of the femoral vessels is usually proximal and distal ligation of the vein and artery involved in the anastomosis, together with all the branches that may intervene between the points of ligation. The further procedures adopted depend on the circumstances, either excision of the sac or its obliteration being carried out. These procedures can be accomplished only with adequate exposure and complete control of the main vessels above and below the field of operation. In the case of the femoral vessels this involves control of the external iliac vessels and of the lower parts of the femoral vessels as early stages of the operation. The vessels can be controlled by special clamps or by small pieces of rubber tubing encircling the vessels and having a cord loosely tied in readiness should control become necessary. It must be emphasized that proximal ligation of the artery alone is inadequate to cure the condition and is almost certain to precipitate gangrene of the leg.

In special circumstances it may be possible to carry out a more surgically sound procedure, aiming at reconstruction of the arterial lumen, by such procedures as those of Matas and Bickham, which have been described by H. Bailey.(4) The vein of the arterio-venous aneurysm or aneurysmal varix is freely opened, after control of the vessels, and the fistula is closed by sutures inserted from within the lumen of the vein. The aneurysmal sac and segment of the vein are then excised, no attempt being made at reconstituting the venous lumen in any circumstances. The ideal procedure is not readily applicable; it needs special technique and atraumatic needles threaded with fine silk impregnated with paraffin, and precautions must be adopted to prevent vascular clotting by the use of sodium citrate solution locally or of heparin. If this procedure is successful, the limb receives its blood supply through the reconstructed artery.

After operation careful nursing is necessary to aid the limb to return to normal and to establish an efficient circulation as quickly as possible. Rogers(7) briefly summarizes the essential features by advising that attention be paid to the posture of the limb, so that its metabolism is reduced and the peripheral vessels are relaxed. The limb circulation should be aided by gravity and the limb is therefore extended in a position approximating to heart level. The leg is cooled; this lowers its metabolism and its demand on a blood supply. Rogers recommends the use of ice, but in the cases quoted, exposure of the leg to ordinary room temperatures was all that was considered necessary; warming of the legs by hot-water bottles or other heat sources was avoided. The peripheral vessels generally are relaxed by the application of warmth to the body, with the exception of the injured leg, and thus the establishment of collateral circulation to the limb is aided. There is not, however, universal agreement about the cooling of the leg, although present opinion is gradually swinging towards cooling rather than heating of the limb during the stage when the collateral circulation is being established. Reichert(8) found that, after ligation of an artery of the previously amputated and resutured limb of a laboratory animal, the limb would live if kept warm, but became gangrenous if allowed to be chilled. The experiment did not appear to be conclusive, and further clinical experience on the subject of freezing or cooling of a limb suffering from vascular damage or ligation is necessary before a conclusion can be reached.

The immediate results of treatment by quadruple ligation and excision of the fistulous area are excellent. The return of the heart to normal size and the improvement in the pulse rate and blood pressure are dramatic. The collateral circulation is usually sufficient to supply the needs of the limb, provided that operation has been delayed for an adequate time after injury. However, Bigger(9) has further investigated some of these cases in which ligations of main vessels of the extremities have been carried out for arterio-venous aneurysms. He has found that there is definite evidence that the circulation is inadequate for sustained muscular activity, and stresses the fact that this important observation has not received the attention which is its due. As an example is quoted a case in which a superficial femoral ligation was performed for arterio-venous fistula, and in which the leg easily tires and the foot is cold. In the series of cases quoted, after ligation of a main vessel for arterio-venous fistula, there was no instance of serious acute circulatory difficulty, but all the patients had evidence of persistent circulatory deficiency. Bigger concludes that, although a patient with arterio-venous fistula has little chance of gangrene after resection of a main artery, even the common femoral or popliteal, yet "such a patient appears to be as prone to chronic circulatory difficulty as one having ligation of the corresponding vessel for arterial aneurysm". It is too early yet to assess the terminal results of the cases quoted in this paper, but a "follow-up" appears to be well worth while at a later stage.

Summary.

1. Two cases of femoral arterio-venous aneurysm of the superficial femoral vessels are reported, to demonstrate the development of an arterio-venous fistula, and also to show the late results in a long-standing case with classical local and cardio-vascular signs.

2. The characters of the thrill and bruit present in arterio-venous fistula are set out and their extensive conduction is described. The cardio-vascular features generally are discussed.

3. The importance of differential diagnosis from arterial simple aneurysm is stressed.

4. The advantage of delay before operative treatment in most cases is mentioned, and the operative procedures adopted are briefly reviewed.

5. The rationale of post-operative treatment is described.

6. The prognosis of femoral arterio-venous aneurysm treated by quadruple ligation and excision is good in respect of immediate results, but signs of chronic circulatory inadequacy are apt to develop, limiting return to full activity in some cases.

Acknowledgement.

I wish to thank Air Vice-Marshal T. E. V. Hurley, Director-General of Medical Services, Royal Australian Air Force, for permission to publish this paper.

References.

(1) J. S. Horsley and I. A. Bigger: "Operative Surgery", Fifth Edition, Volume I, 1940, page 151.

(2) E. Holman: "Arterio-Venous Aneurysm", 1937, page 48.

(3) J. M. Mason, G. S. Graham and J. D. Bush: "Early Cardiac Decompensation in Traumatic Arterio-Venous Aneurysms", *Annals of Surgery*, Volume CVII, June, 1938, page 1029.

(4) H. Bailey: "Surgery of Modern Warfare", Second Edition, Volume I, 1942, page 250.

(5) H. Tarnower, B. Lattin and S. G. Adie: "The Successful Closure of an Arterio-Venous Aneurysm Involving the Left Innominate Vein and Left Common Carotid Artery", *Annals of Surgery*, Volume CXVI, November, 1942, page 700.

(6) E. Holman: "The Immediate and Late Treatment of an Arterio-Venous Fistula", *The Australian and New Zealand Journal of Surgery*, Volume XIV, October, 1944, page 83.

(7) L. Rogers: "Physiological Considerations in Vascular Surgery: Ligation of Main Arteries of Limbs", The Medical Journal of Australia, May 19, 1945, page 517.

(8) F. L. Reichert: "The Importance of Circulatory Balance in the Survival of Replanted Limbs", *Bulletin of the Johns Hopkins Hospital*, Volume XLIX, August, 1931, page 86.

(9) I. A. Bigger: "Treatment of Traumatic Aneurysms and Arterio-Venous Fistulas", *Archives of Surgery*, Volume XLIX, September, 1944, page 170.

PUTRID LUNG ABCESS.

By C. J. Officer Brown,
Melbourne.

Putrid lung abscess is a serious and by no means infrequent complication of surgical operations and parturition. Since 1939 I have operated on 41 patients for lung abscesses, 21 of which followed operation or parturition (Table I).

The common factor in all these 21 cases was general anæsthesia; in most cases the anæsthesia was "troublesome", or post-operative vomiting occurred. Some patients had recovered too soon from anæsthesia in a dental operation, and anæsthesia was reinduced when the patient had his mouth full of blood and saliva. In one case teeth and tonsils, and in another tonsils and antra, were dealt with at the same operation. In yet another case, although the patient was not seen to vomit, some dried vomitus was noticed on the pillow. Post-operative lung abscesses result from the inhalation of blood, pus or debris, and it can be shown by bronchoscopy that some blood always enters the trachea during any operation on the nose or mouth unless special measures are taken to prevent it. Even in a conscious patient the laryngeal reflex is not the complete protection it is often assumed to be. Lipiodol introduced into the pharynx of a sleeping patient can be demonstrated radiologically in the lungs next morning, and heavy sedation is quite sufficient to put the laryngeal reflex off its guard.

If the patient is lying on his back, inhaled material tends to gravitate into the bronchus to the apex of a lower lobe—usually in the right lung—and if he is lying on his side it flows first into the upper lobe bronchus of the lower lung. These facts can readily be demonstrated with lipiodol under the X-ray screen. Post-operative abscesses are most common in the apices of the lower lobes and in the upper lobes.

After regional block anæsthesia inhalation may occur while the patient is "sleeping it off", and heavy sedation should be avoided in these cases.

TABLE I.

Ætiological Factor.	Number of Abscesses.
Dental operations	7
Parturition	6
Abdominal operations	5
Ear, nose and throat operations ..	3
Foreign bodies	2
Carcinoma of the lung	1
Unknown	1
"Pneumonia" *et cetera*	16
Total	41

It is recognized that some blood is aspirated into the lungs in the majority of mouth and nose operations, but in most cases this is coughed up and causes no trouble. In some cases a small bronchus becomes blocked by the inhaled material, and the corresponding segment of lung becomes atelectatic; with infection added, a localized pneumonitis develops, and this is the explanation of many cases of post-operative pneumonia. When the infecting organisms are necrotizing dental anaerobes or similar types, a putrid lung abscess results.

The segment of atelectatic lung always abuts on the visceral pleura, and infection excites an intense pleural reaction and adhesions form over the area of reaction. Since the greater part of the surface of the lung is in contact with the chest wall, in most cases these adhesions fix the site of the abscess to the chest wall. This does not happen if the abscess reaches the pleura on the diaphragmatic or mediastinal surfaces of the lung, or in a fissure. In all other cases there is an area of adhesions through which the abscess can be drained without opening the free pleural space. This area is sealed off early and the adhesions are firm within two or three weeks of the onset of the abscess. The area of fusion may be limited and is often not more than an inch or two in any direction; but with accurate localization it is usually adequate for approach to the abscess.

Cavitation always occurs in seven to ten days from the onset, and in acute abscesses the cavity is found to average about two inches in diameter, and is solitary, spherical and unilocular. It contains pus, debris and sloughs, and after a few days opens into a bronchus; this allows the exit of the foul gases which cause the putrid smell and taste, even before any pus is evacuated. As the bronchial opening enlarges, pus and sloughs may be evacuated and spontaneous cure may result.

In most cases bronchial drainage is inadequate and the process tends to become subacute. Fibrosis develops in the wall of the abscess and in the adjacent lung, local extensions occur causing multiloculation, and "spillover" into adjacent bronchi results in satellite abscesses and bronchiectasis. At this stage drainage is useless, and the only hope of cure is by extirpation of the diseased portion of the lung. At any stage the abscess may perforate into the pleural cavity, causing a localized or generalized pyopneumothorax. Cerebral abscesses may result from blood spread, and amyloid disease may develop from long-continued suppuration. "Spillover" into other parts of the lung may cause suppurative pneumonia or other abscesses.

Acute, subacute and chronic stages shade into one another; but it is helpful to separate them arbitrarily. For practical purposes a abscess less than six weeks old is acute, from six weeks to three months it may be considered subacute, and after three months it is considered chronic.

Symptoms.

After operation there is usually an incubation period of a few days, followed by the onset of illness with flushes, chilliness and rigors. Pain in the chest indicates the site of pleural involvement, and localized tenderness may be elicited over this area. A cough develops, and although at first it is dry and irritating and non-productive, in a short time—usually ten or twelve days from the onset—the patient begins to expectorate foul pus in increasing amounts. Some days before expectoration commences a foul odour may be noticed in the breath, and this is diagnostic of the presence of a lung abscess. Hæmoptysis frequently occurs. The maximal interval between operation and onset is probably fourteen days.

Prophylaxis.

Dentists and surgeons are usually held responsible for the development of post-operative lung abscesses, but the real blame in most cases lies with the anæsthetist. No operation on the mouth or throat, involving general anæsthesia, should be performed unless the patient is in a well-equipped hospital. The operation should always be performed with the patient in the prone position, and when it is likely that aspiration will occur, the anæsthetic should be administered through an endotracheal tube and the pharynx should be packed or otherwise shut off. In any operation, if aspiration does occur or is suspected, the air passages should be cleared at the end of operation by tracheal suction or bronchoscopy, and in the post-operative period, if atelectasis develops, active measures should be taken to overcome it. First the patient should be given morphine, laid on the sound side and vigorously thumped and rolled about. This may start a fit of coughing with the expulsion of a plug of mucus or blood clot, which will be followed by reexpansion of the collapsed area. If it fails, tracheal suction with a catheter may be tried or bronchoscopy may be used. Bronchoscopy, although somewhat terrifying to a sick patient, is undoubtedly the best method, and should be looked on as an essential accomplishment for any specialist anæsthetist. I make it a routine measure after all operations to insist that the patient takes regular deep breaths and coughs, even if it hurts, because sputum retention is the commonest cause of post-operative chest complications.

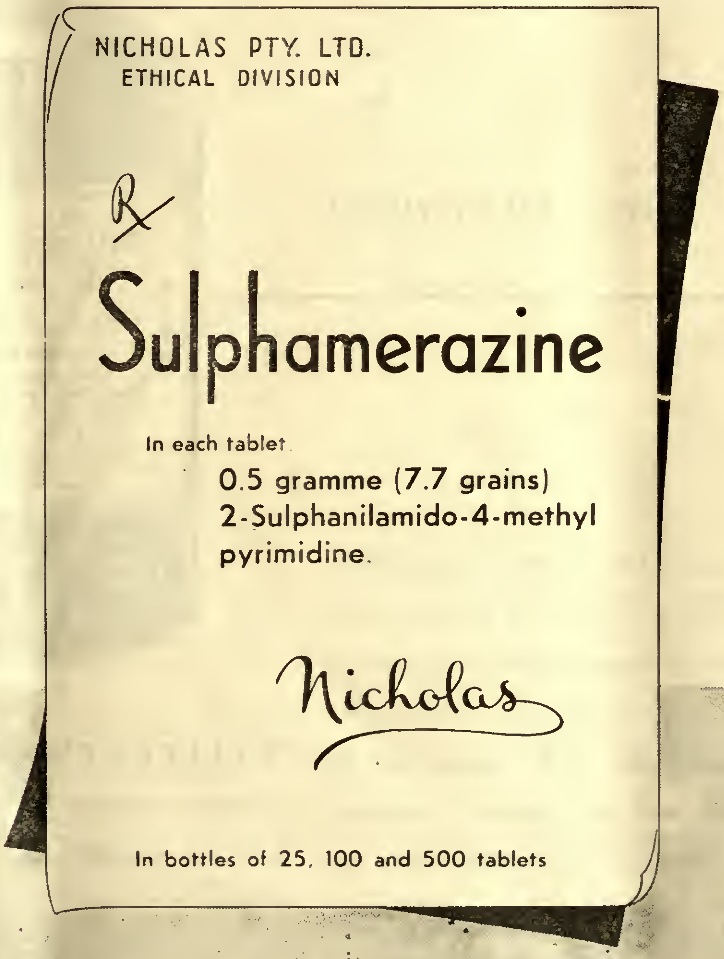
No operation of election should be performed in the presence of dental infection, and dental inspection should be a routine measure before operation in all hospitals.

Management.

The majority of acute abscesses require surgical drainage, just as surely as operation is required for the treatment of acute appendicitis. Both conditions may resolve spontaneously; but the decision whether to operate or not and when to operate is entirely the province of the surgeon, who should be called in as soon as a lung abscess is suspected. It is obvious that complete resolution is much more likely to occur if the infection can be controlled in the acute stage before secondary changes have developed in the surrounding lung. If drainage has to be attempted, it is much more likely to succeed in the acute unilocular stage than when the cavity is multilocular and the surrounding lung fibrotic and honeycombed. Once the condition of chronic pulmonary suppuration has been reached, although drainage may bring about some improve-

Sulphamerazine

— NICHOLAS



NICHOLAS PTY. LTD.
ETHICAL DIVISION

℞

Sulphamerazine

In each tablet
0.5 gramme (7.7 grains)
2-Sulphanilamido-4-methyl
pyrimidine.

Nicholas

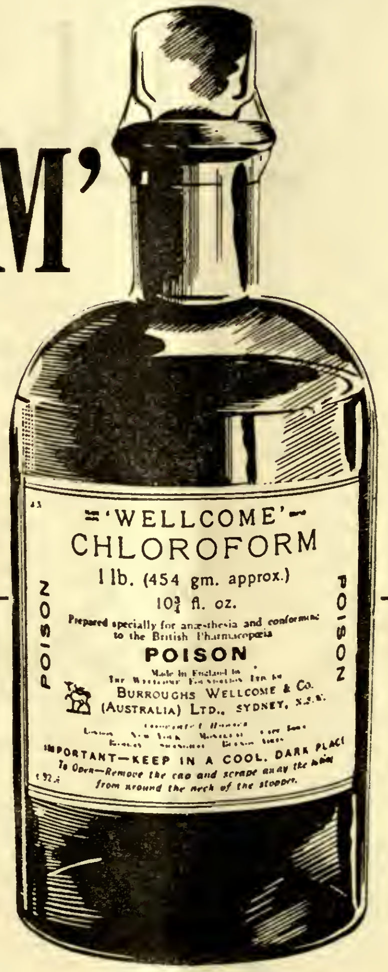
In bottles of 25, 100 and 500 tablets

A NICHOLAS ETHICAL PRODUCT

'WELLCOME' BRAND

'CHLOROFORM'

FOR ANÆSTHESIA


'WELLCOME' BRAND
CHLOROFORM
1 lb. (454 gm. approx.)
10¾ fl. oz.
Prepared specially for anæsthesia and conforming to the British Pharmacopœia
POISON
POISON
POISON
Made in England
BURROUGHS WELLCOME & Co.
(AUSTRALIA) LTD., SYDNEY, N.S.W.
IMPORTANT—KEEP IN A COOL, DARK PLACE
To Open—Remove the cap and scrape away the ... from around the neck of the stopper.

'WELLCOME' brand CHLOROFORM is particularly free from irritating products of decomposition. Contains a small definite amount of ethyl chloride which has a marked beneficial influence on induction of anæsthesia. It is manufactured by processes which have been proved by extensive research and experience to yield the most satisfactory results. Careful analytical control ensures that it conforms not only to the pharmacopœial requirements but also to the stringent standards laid down for all 'Wellcome' Brand Chemicals. Complete freedom from phosgene (a frequent and dangerous impurity) is demonstrated by micro-chemical tests of every batch.

'WELLCOME' BRAND CHLOROFORM is issued in stoppered amber bottles of 2 ozs., ¼ lb., ½ lb. and 1 lb.

BURROUGHS WELLCOME & CO.
(AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

ASSOCIATED HOUSES: LONDON NEW YORK MONTREAL
CAPETOWN BOMBAY SHANGHAI BUENOS AIRES

ment in selected cases in which large, poorly-drained pus-containing cavities are present, cure is rarely possible except by extirpation.

Probably about 30% of putrid abscesses resolve spontaneously, and it is reasonable to be conservative for a few weeks in cases in which abscesses are apparently draining well into a bronchus, when the course is not very acute and the cavity is only moderate in size. Penicillin should be used for these patients and will help if bronchial drainage is sufficient. Unless resolution is progressing satisfactorily, drainage should never be delayed beyond six weeks, and if symptoms recur after apparent resolution the abscess should be drained without further delay. Resolution must be assessed on the disappearance of clinical symptoms (rise in temperature, cough, sputum) and the clearing of X-ray signs. Until the X-ray findings are normal relapse is likely, and the patient should never be discharged from hospital. Good X-ray films must be taken every week during the period of observation, and if there is any evidence of deterioration extra films should be taken at once. Clinical examination is of little value, and the progress of the lesion can be followed only by radiological methods. Films should be taken in two planes, and various intensities and exposures should be used in an attempt to demonstrate a cavity, if one is not readily visible. Because cavities appear and disappear in the films in accordance with their content of pus or air, sufficient films should be taken for accurate localization on the first occasion when a cavity is demonstrated. Accurate localization is the *sine qua non* for successful drainage.

Non-operative treatment consists of "wait and see", with supportive regime, drugs and postural drainage. Bronchoscopy should generally be used once, to exclude the presence of a foreign body or a carcinoma or other obstruction in a bronchus. It is occasionally of value in improving drainage, especially in the case of abscesses in the basal parts of the lower lobes. Bronchoscopy should be carried out by the surgeon, because the information obtained helps in localizing the abscess and determining when and how to operate; it should not be repeated unless it has obviously improved drainage, or in an emergency, when a sudden flooding of the bronchial tree has occurred and aspiration is necessary to relieve respiratory distress.

Sulphonamides are useless for putrid infections. Penicillin is efficient in controlling them, provided drainage is adequate, but it is useless without effective drainage. It should be used for twenty-four hours before operation and for as long as seems necessary after operation. Penicillin prevents the sloughing of the surfaces of the wound and hastens the disappearance of the putrid odour after operation, and it seems likely that it reduces the risk of "spillover" suppurative pneumonia and possibly cerebral abscess in the immediate post-operative period, when coughing is painful and retention of secretions difficult to prevent.

With accurate localization nearly every lung abscess can be approached through the adherent area and drained in one stage. If the pleura is inadvertently opened, a two-stage operation may be necessary; but this has happened in only a few of my cases.

Drainage should be carried out at once in the case of all hyperacute abscesses and all abscesses with exceptionally large cavities, and in the case of an acute abscess that has not responded satisfactorily to a few weeks' delay. It may be tried for subacute and chronic abscesses with large, poorly-drained cavities associated with copious sputum. Often in these cases lobectomy will be needed; but the risk of the major operation may be reduced by preliminary drainage, to reduce the volume of sputum and improve the patient's condition.

Lobectomy is the only treatment for the patient who has passed into the stage of chronic pulmonary suppuration with multiple cavitation and bronchiectasis. Many of these people are reasonably well, but have persistent cough and sputum, and in my experience they have all been cured by lobectomy. Contrasted to these is a small group of patients whose infection is diffused through a lobe with multiple small cavities and much fibrosis. They are febrile and toxæmic and losing ground, but there is no cavity that can be drained, and lobectomy seems to offer them their best chance of recovery. Lobectomy was performed on five of my patients suffering from this condition. The first, in 1940, died on the operating table from suffocation by the cheesy pus squeezed from the lobe as it was being freed. Improved methods of anæsthesia and operation that we now use would have prevented this, and recently Dr. R. H. Orton piloted an even more troublesome patient through a successful three-hour lobectomy by repeated bronchial suction and bronchoscopy during the operation. The next two patients survived the operation, but succumbed to putrid infection a few weeks later. Penicillin would probably have saved these two. The last two have done well. One is cured and the other is convalescent.

Results.

The results have been as follows. From 1939 to 1941, 10 patients had lung abscesses drained; two patients were cured and eight died. From 1942 onwards, 16 patients had lung abscesses drained; 11 patients were cured, one died, the condition of two was improved and they were later cured by lobectomy, one contracted tuberculosis, and the condition of one was not improved. Lobectomy for carbuncle of the lung was carried out in five cases; one patient was cured, one is convalescent and three died. Lobectomy for chronic suppuration after a lung abscess was carried out in 13 cases; all the patients were cured. Thus, of 18 patients submitted to lobectomy, three died.

In three of the cases in the 1942 and after group two separate abscesses were drained. In one case recovery followed drainage of a complicating localized pyopneumothorax, and in another recovery followed a first-stage operation in which rib resection was performed and the cavity was not found, the wound being packed and closed to allow further localization. Penicillin had been used for some days before operation without response, and its administration was continued after operation. The patient's temperature became normal, and after an initial increase, cough and sputum disappeared and he made a complete recovery without further operation.

Acknowledgements.

I should like to express my indebtedness to the writings of Neuhof and Touroff and their associates. From them I obtained an understanding of the pathology and management of lung abscesses, and I have had opportunity to confirm the accuracy of the principles they enunciate. At the Mount Sinai Hospital in the last sixteen years these men have operated on 172 patients suffering from acute putrid lung abscess, with four deaths.

Bibliography.

Arthur S. W. Touroff and Harold Neuhof: "The Differentiation between Acute Putrid and Non-Putrid Pulmonary Abscess", *The Journal of Thoracic Surgery*, Volume X, August, 1941, page 618.

H. Neuhof: "Acute Putrid Abscess of the Lung", *Surgery, Gynecology and Obstetrics*, Volume LXXX, April, 1945, page 351.

INGUINAL HERNIA AND ITS REPAIR.

By Harley Turnbull,
Lieutenant-Colonel, Australain Army Medical Corps,
Australian Imperial Force.

The Bassini operation is standing its trial. English surgery in particular has been vehement in its condemnation, and unequivocably demands the death of the Bassini technique. The operation was first described by Bassini in 1889, and for fifty-five years it has been accepted. If it is to be condemned, the evidence on which it is sentenced must be irrefutable and irreproachable. Those who wilfully destroy must of necessity rebuild, and the new edifice must be finer and better.

The objections to the Bassini operation are based on the statistics of recurrences, and a dogma which depends on statistics must always be suspect. An article by Edwards in *The British Journal of Surgery* of October, 1943, is typical of this trend in the surgical treatment of hernia, and is an example of the ever-increasing number of articles over the last ten years damning the Bassini operation. Edwards draws attention to the alarming recurrence rate, and dogmatically states that it is due to a blind adherence to the Bassini technique. He quotes figures which were published by Max Page in 1943, and he bases his conclusions largely on them. They are the results of 142 operations performed in 1943. These figures are shown in Table I:

TABLE I.
After Edwards.

Operation.	Number of Performances.	Recurrences.	Recurrence Rate.
Excision of sac	86	8	9·3%
Fascial repair	39	6	15·4%
Other methods :			
Bassini .. 7	17	3	17·6%
Fowler .. 6			
McArthur .. 3			
Bloodgood .. 1			

The striking fact is the low number of Bassini operations on which Edwards bases his opinion; the McArthur and Bloodgood operations are only slight variations of the Bassini operation and can be classed as a Bassini operation, so that the total is 11 operations out of 142. The Fowler operation can by no means be called a Bassini modification, so that the given numbers included in "other methods" should be 11 Bassini and six Fowler operations. The recurrences were three—a rate of 17·6%. There is no mention of the type of operation—the Bassini or the Fowler —in which the recurrences were observed. These figures are thus unfair to the Bassini technique. As they stand in the article by Edwards they are valueless, for there are three fallacies, one of which has been mentioned. Other important fallacies are as follows: (i) the operations were performed by different men, who must vary in skill, technique and judgement; (ii) much vital information is omitted—the age of the patient, his general physique, the type of hernia, the suture material, the type of anæsthesia, pulmonary complications, sepsis, the period of incapacity (that is, the length of stay in bed), the length of convalescence, and the period before hard work was resumed. Without full information the figures are unintelligible, and surgeons would be ill-advised to discard Bassini's operation on a spurious deduction from such figures.

To illustrate how treacherous and misleading figures without detail can be, the following two hypothetical cases may be put forward. The first patient has a large scrotal hernia of some years' standing; the sac is thickened, fibrous and adherent, and there is gross distortion of the anatomical planes. The second patient is a young man, whose tissues are firm and tonic; the hernia is small and a bubonocele, the hernial ring, is small and there is no distortion of the tissues. The first patient undergoes a Bassini operation and the hernia recurs; the second has the sac excised and the hernia does not recur. Is it justifiable to state that the Bassini operation is no good and should be discarded without considering the difference in the two types of hernia and the relative difficulty of the two operations? Excision of the sac can be performed only in selected cases, and the recurrence rate should be lowest in such a group. What is to be done with the other cases? It is postulated that there are only two operations that can be performed—the Bassini operation or a fascial repair. On the quoted figures, which by no means give the true position, the recurrence rates were respectively 17% and 15%. The rate may well have been much lower for the Bassini operation alone, for with it are included six Fowler operations. Is it wise to state on these figures that fascial repair should replace the Bassini operation, as Edwards states? Edwards's final words are that early hernia should be treated by excision of the sac with tightening of the internal ring; all other herniæ should be treated by fascial repair; the Bassini operation and its modifications must be abandoned.

There is no evidence here for a *prima facie* case against the Bassini operation. Each surgeon must form his own opinion, but that opinion must be impartial, and founded on rock, not sand. The provocative opposition to the Bassini operation has stimulated an interest which must result in progress, for the treatment of hernia is not so satisfactory as it should be. It is of great importance now because the number of operations for hernia performed on servicemen is large. The combined loss of man-hours from these cases is enormous, and this loss is substantially increased if the recurrence rate is high.

Ogilvie, of England, for a long time has been a bitter opponent of the Bassini operation. His main arguments against the operation are three: (i) suture of the conjoint tendon to the inguinal ligament means a muscle working out of place; (ii) the abdominal wall is weakened; (iii) recurrence is favoured rather than prevented. These statements must be considered in detail, and the answer is found in the anatomy of the inguinal region.

The lowest fibres of the internal oblique arise from the lateral two-thirds of the inguinal ligament, and with the lower fibres of the *transversus abdominis* form the conjoint tendon. The union results in a sickle-shaped fold, which is inserted into the pubic crest and the medial three-quarters of an inch of the ilio-pectineal line. The direction of the fibres is downwards and medial. When the muscle contracts, it must do so in the direction of its fibres—that is downwards and medially. This results in the lower border's becoming straight, taut and approximated closer to the inguinal ligament. The natural action of the conjoint tendon is thus to draw itself downwards on contraction. In muscular people the conjoint tendon as such exists only at its insertion, and the muscle of the internal oblique and transversus is often so low that it abuts against the inguinal ligament in its natural position.

When the conjoint tendon is sutured to the inguinal ligament, as in the Bassini operation, the tendon is put in a position that is a slight exaggeration of the normal, and it is sutured in the direction of its pull. If unabsorbable sutures are used, fibrous union does occur between the two structures, despite statements to the contrary. Castigators of Bassini state that this fibrous union is not sound, will not withstand strain and has been achieved by the destruction of the muscle fibres. It is asserted that the insertion of sutures into the conjoint tendon to anchor it to the inguinal ligament strangles the blood supply, and causes a traumatic necrosis of the muscle fibres and their replacement by fibrous tissue. Is this strictly true? How often is it found that the lower inch or so of the conjoint tendon is completely devoid of muscle, and is a flat sheet of fibrous tissue of tendinous composition? Tendon is practically avascular, so how can a blood supply be strangled that does not exist? And how can fibrous tissue be changed into fibrous tissue?

When the tendon is sutured to the medial two-fifths of the inguinal ligament, its normal position is only slightly changed, as is the direction of the pull of its fibres; should not this union be considered an extension of the insertion of the tendon? If this is so, then the abdominal wall should be strengthened, for the tendon has a greater purchase. If the conjoint tendon is firmly attached to the inguinal ligament, and if the ilio-hypogastric and the ilio-inguinal nerves are intact, when the internal oblique contracts there can be no increased weakness of the abdominal wall.

If the Bassini operation weakens the abdominal wall, then recurrence when it takes place should be through the weakest spot, which is not at the internal ring but at Hesselbach's triangle. Recurrences should accordingly be direct rather than indirect. Experience shows that, irrespective of the original type of hernia, 66% of the recurrences are indirect; this proves that the wall cannot be weakened by the operation.

Antagonists of Bassini point to the good results achieved in children by simple ligation and excision of the sac, using this fact as an argument against mechanical repair.

They overlook the basic principles that in children the tissues are firm and tonic, that there is no anatomical distortion, that the sphincteric action of the internal ring is unimpaired, and, what is more important, that the older the child grows, the less is the chance of recurrence. In the child the size of the internal ring compared to the area of the abdominal wall is relatively much greater than in the adult. As the child ages, the size of the internal ring diminishes, owing to a "step-up" in the area and bulk of the abdominal wall, until man's estate is reached. Therefore the tendency to recurrence progressively diminishes as the child develops. Heavy work, stress and strain are potent factors in causing recurrence; but the child's musculature is not subjected to the same degree of strain as is the adult's, so that after operation the passing of the years permits Nature to effect a permanent cure.

These are the answers to the three statements by Ogilvie: the muscle is not working out of place, the abdominal wall is not weakened, and recurrence is not made easier.

Those who would discard the Bassini operation must of necessity put forward much weightier evidence than they have done. The Bassini operation is not suitable for every hernia, but it should be retained for those cases in which it is suitable—a decision for which the operating surgeon alone must be responsible.

ANATOMY OF INGUINAL HERNIA.

The anatomy of the inguinal region reveals in part the secret of success or recurrence. The inguinal canal is 1·5 inches long, and being cone-shaped, consists of an apex, a base and anterior and posterior walls. It runs obliquely from above downwards and medially. The apex is a finger's breadth above the mid-point of the inguinal ligament corresponding to the position of the internal ring. The anterior wall is formed throughout by the external oblique and the posterior wall throughout by the transversalis fascia, and placed between these two are the internal oblique and conjoint tendon, which encircle the canal, taking part in the formation of both anterior and posterior walls. The strength of the canal depends on the internal oblique. Anteriorly this muscle covers the lateral third of the canal including the internal ring and thus forms a part of the anterior wall; it then curves round as the conjoint tendon, and owing to the obliquity of the canal, it forms a posterior relation of the medial third of the canal. Where it forms the posterior wall the internal oblique has joined with the *transversus abdominis* to form the conjoint tendon. The floor is formed by the grooved surface of the inguinal ligament and by the lacunar ligament, which is the area of insertion of the inguinal ligament on to the ilio-pectineal line. The external ring is triangular in shape, admits the tip of the finger and is formed by the pillars of the external oblique. The floor of the canal is further strengthened by the transvesalis fascia and by the insertion of the reflex inguinal ligament from the opposite external oblique into the ilio-pectineal line. Consideration must be given to the internal oblique and to the conjoint tendon, for these constitute the real strength of the canal.

Owing to the obliquity of the canal and the sickle shape of the conjoint tendon, when the internal oblique contracts it has a two-fold action, and the canal is compressed by two opposing forces. The internal oblique compresses the lateral third of the canal and internal ring backwards; the conjoint tendon compresses the medial third of the canal from behind forwards. The double action results in the formation of the two potential sphincters—one at the internal ring and lateral portion of the canal, the other at the external ring and medial portion of the canal. This opposing action explains why a bubonocele is retained in the canal for a variable period. It breaks through the first sphincter and the internal ring, and is then delayed by the second sphincter at the external ring.

In the construction of the canal are two points of weakness: one is of necessity the internal ring; the other is the area just medial to the inferior epigastric vessels and lateral to the pubic tubercle. It is at these two points that hernia occurs. Therefore, any operation must be designed to reinforce these two areas; otherwise it will fail.

RELATIVE FREQUENCY OF HERNIA.

Of herniæ 75% are indirect, 25% direct. Recurrence rates for both types of hernia are variously estimated from 0% to 30%. The 0% figure can be discarded. The average figure is probably about 15% and will vary with the skill of the surgeon. Of the recurrences, 60% to 70% are indirect. This fact requires careful thought. It means that three-quarters of all herniæ are indirect and three-quarters of the recurrences are indirect—that is that in 75% of the recurrences the original hernia is reproduced. One most important fact is thus brought to light, for it is obvious that at operation for both types of hernia the surgeon has failed to deal adequately with the internal ring. The explanation why most herniæ recur as indirect herniæ is simple and is indirectly wrapped up in the internal ring. In my experience, fully 66% of the so-called direct herniæ have no claims whatever to be called direct herniæ, for the hernia is a combination hernia with both direct and indirect sacs. This calls for a revision of the nomenclature and of the relative frequency of the various types of hernia. The figures should read: indirect hernia 75%, combination hernia 15%, direct hernia 10%. In 66% of the direct herniæ, if a search is made at the beginning of the spermatic cord at the internal ring, a small indirect sac will be found. This is never more than an inch long, is very fragile, is non-adherent and has never been filled with contents. If this fact is not recognized at operation for direct hernia and the search is not made for the indirect sac, then the seed is sown for the growth of an indirect recurrent hernia, and the operation has been a failure. This explains the frequent recurrence of so-called direct herniæ as indirect herniæ. The funicular hernia of Ogilvie is not a separate hernia, but a direct hernia which has come through a small aperture in the posterior wall of the inguinal canal just lateral to the pubic tubercle.

CAUSES OF RECURRENCES.

All indirect herniæ are congenital, and Nature has fallen down on her job. It is thus beyond our means to prevent the occurrence of hernia; but by adequate operation planned on physiological and anatomical grounds the condition can usually be cured and recurrences largely prevented. The causes of recurrence in general can be labelled in most cases as bad surgery, due to ignorance of the condition, and these causes can be grouped under the following headings.

Poor Technique.

Poor technique covers a multitude of sins—brutal handling of the tissue, tearing instead of cutting and stripping, faulty hæmostasis, inadequate treatment of the sac, missing of the sac, insertion of sutures under too great a tension, faulty knots, injury of the ilio-hypogastric and ilio-inguinal nerves, incomplete kowledge of the mechanics of hernia, a lax aseptic technique, and lastly, tedious surgery.

Ill-Advised Operation.

If the surgeon has a faulty conception of the mechanics of hernia formation, he cannot perform the appropriate operation required for each type. He fits the patient to a standard operation and does not plan his operation to fit the patient.

Faulty Pre-Operative Supervision.

The general physique of the patient is important. A repair should not be performed during a period of ill-health, and all general diseases should be eradicated. Toneless, atrophic tissues must be rebuilt, muscles strengthened and the patient's general condition improved. Complacency in repair of hernia cannot be tolerated. The best time to operate on a hernia is when it first occurs. Too often does the medical man say: "Yes, you have a rupture, but it does not matter much, you can have it fixed up if it troubles you." Apart from subjecting the patient to the complications of hernia, the medical man must remember that a hernia is never stationary—all the time it is increasing in size and insidiously causing greater and greater anatomical distortion, and the cure is gradually passing from a simple to a more difficult operation with the greater chance of recurrence. In the case of the large, irreducible, scrotal hernia the patient should be put to bed for a period of time in a moderate Trendelenburg position, and compression spica bandages should be used; often the hernia will be spontaneously reduced. If this occurs, the elastic tissues will take up and a difficult operation will be made easier.

Faulty Suture Material.

In a mechanical repair operation the tissues are sutured under slight tension, otherwise a firm repair will not result. Therefore, as the tissues are sutured under some tension, they must be firmly anchored until union occurs. In the case of tissues that are relatively avascular (such as fibrous and tendinous tissues), this apposition must be maintained for a much longer period than in the case of tissues with a good blood supply. Success in these cases thus depends on the sutures, which must be non-irritating and unabsorbable. Silk, thread or stainless steel wire are the sutures to use, and the best of all is silk. This applies also to chromicized gut. Silk is the ideal suture, and it must be used for the whole operation; bleeding points must be tied with it and it must be used in each stage of the repair. Catgut should not be used in combination with silk. The dictum that Halstead gave to the world long ago still holds good—that if silk is used it must be used alone, and not in conjunction with catgut.

In the use of silk there are three points that are to be remembered. The knot must be a surgical knot—that is, a double twist in the first part completed as a reef knot—or else a triple knot. Silk thicker than necessary must not be used, and lastly, if the knot is tied as advised, it will not slip and the threads should be cut directly on the knot, so that long ends are avoided.

Post-Operative Complications.

Despite every effort, post-operative complications will occur. The aim should always be to prevent them and thus minimize their occurrence.

Pulmonary Complications

Pulmonary complications are common, irrespective of the type of anæsthesia used, and as such favour recurrence. Careful pre-operative care should be given, particularly to the heavy smoker. Nicotine before operation is a potent cause of trouble after operation. Heavy smoking results in rhinitis, sinusitis, pharyngitis and a "dirty" mouth. The soil is thus present in which the seed may grow. Smoking should be stopped, or at least reduced to a minimum, for two weeks prior to operation. If this is done, upper respiratory infection will largely subside, the "dirty" mouth will become clean and the possibility of pulmonary complications will be lessened.

The anæsthesia used is of no importance; complications occur equally after any form. My own preference is for spinal anæsthesia, for it gives perfect relaxation and avoids post-operative vomiting.

Sepsis.

If sepsis occurs, recurrence is almost inevitable. Sepsis causes œdema, tension, inflammation, hyperæmia, cutting-out of sutures and delayed healing. It can be avoided by adequate skin preparation, the use of side towels, careful surgical technique and perfect hæmostasis.

Complications Due to Faulty Post-Operative Care.

A common cause of recurrence is to allow the patient up too soon. Bodily activity must be eliminated until healing occurs. If this is not done, the whole strain of the abdominal wall is taken by the sutures, in which case the surgeon asks too much. Relatively avascular tissues, such as fibrous tissues and tendon, require three times as long for healing as vascular tissues, such as muscle. In respect of a hernia operation, the period of stay in bed is thus obvious. After the simple excision of the sac the only fibrous tissue sutured is the external oblique; therefore the stay in bed must be two weeks. When a mechanical repair is performed, such as a Bassini operation, the stay in bed must be longer—a minimum period of three weeks. For most patients with poor physique and large herniæ, the stay in bed must be four weeks. If a post-operative complication occurs—particularly sepsis—the rest period is proportionately longer. The time in bed can be profitably employed by the institution of gentle abdominal exercises starting not before the beginning of the third week. No lifting is to be done for a minimal period of two months from the time the patient is allowed out of bed, and during this period the patient takes gentle physical training. At the end of three months from the time of operation the patient makes a start on heavy work, and this is increased over the next month. By the end of four months there are no restrictions. Should the work be very heavy during this fourth month, a light abdominal belt should be prescribed in order to take the general abdominal strain.

How is Hernia to be Treated?

There are only two hernia operations that should ever be performed: (i) simple excision of the sac with tightening of the transversalis fascia; (ii) a modified Bassini repair, alone or combined with fascial graft. All other operations are superfluous.

Simple Excision of the Sac.

Simple excision of the sac is the operation of choice for early, small, indirect hernia. The cases must be carefully selected. The patient is usually young and his abdominal muscles are firm, tonic and well developed. No anatomical distortion must be present, which means that the hernia must be of short duration. The sac is ligated and excised just above the neck, the spermatic cord is not dislocated from its bed, the transversalis fascia is tightened and the internal ring is narrowed until it fits snugly around the cord.

Modified Bassini Repair.

The modified Bassini repair operation must be performed in all cases that do not come into the above-mentioned class—namely, all direct herniæ, all combined herniæ and all indirect herniæ that are chronic, large and adherent. In short, it must be performed in all cases in which there is any distortion of the abdominal wall, however slight it may be, and it must always be performed in the case of recurrent hernia.

Technique of the Modified Bassini Repair.

The original operation of Bassini is never strictly followed by the writer. The broad principles are the same, but the scope of the operation is enlarged in order to strengthen the weak points on the canal.

The incision is made through the skin and fascia, and skin towels are sutured on; a four-inch incision is made in the external oblique in the direction of its fibres. This incision must come well forward over the pubic tubercle, which must be exposed, and free access must be given to repair this weak point in the abdominal wall. This incision goes through the external ring, and the edges of the divided external oblique are picked up with hæmostats and widely retracted. The upper portion is stripped up with the finger from the internal oblique to the point of its union with that muscle. The lower portion with the inguinal ligament is carefully cleaned on its proximal and distal surfaces. The ilio-hypogastric and ilio-inguinal nerves are picked up and held out of the way. The spermatic cord is then freed from the surrounding tissues just above the pubic tubercle by passing the fingers from side to side underneath it, and a piece of gauze is then passed through so that the cord can be elevated when necessary. The bulk of the cord is not displaced. The cremasteric fascia is incised longitudinally and the edges are retracted. The sac will then be found on the anteromedial aspect of the cord.

FOR PRE-NATAL AND POST-NATAL NUTRITION . . .

NON IRRITATING
Enertone
VITAMIN ENRICHED
CEREAL FOOD
A PRO-VITA PRODUCT

Enertone

The hospital-tested cereal food rich in essential Vitamin B Complex and Minerals so vitally necessary in palatable and supplementary form for mother and infant during Pregnancy and Lactation.

ENERTONE is produced by the makers of famous PROVITA WEATHARTS.

VITAMIN-ENRICHED — PRE-DIGESTED — PLEASANT TO THE PALATE

ENERTONE is obtainable from Chemists only—3/6.

PRO-VITA PRODUCTS, 422 COLLINS STREET, MELBOURNE, C.1

The Years Ahead

. . . The Wise Man and his Will

THE Wise man recognises that economic conditions continue to change.

By the appointment of Perpetual Trustee Company as his Executor he provides for the efficient management of his Estate and thus saves his family from many difficulties.

Write for a copy of the booklet "Your Executor and Trustee", which explains the service that the Company renders and what it costs.

PERPETUAL TRUSTEE

COMPANY LIMITED

DIRECTORS:
T. H. Kelly (Chairman); Hon. T. A. J. Playfair, M.L.C.; E. R. Knox; H. Norman Pope; Allen C. Lewis; Hon. J. P. Abbott, M.H.R.
H. V. Douglass, Managing Director.
A. G. Armytage, Manager.

Executor and Trustee, Agent under Power of Attorney for absentees and others, Administrator, etc.

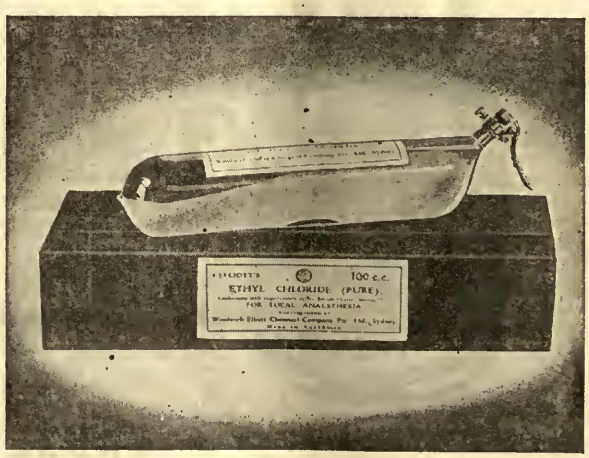
TRUST AND AGENCY FUNDS UNDER ADMINISTRATION EXCEED £64,000,000.
(The average estate being less than £10,000.)

33-39 HUNTER STREET, SYDNEY

Southern and Riverina District Representative: C. E. Cowdery, Gurwood Street, Wagga Wagga.
Western District Representative: H. A. Shaw, 140 Lord's Place, Orange.
Northern District Representative: F. T. B. Thomas, Fitzroy Street, Tamworth.

Ethyl Chloride

WOOLWICH or ELLIOTT BRAND



PROFESSIONALLY PREFERRED

- **Years of manufacturing experience.**
- **Quality always provided.**
- **Full conformation to B.P. requirements.**

WOOLWICH-ELLIOTT CHEMICAL CO. PTY. LTD.
17 O'Connell Street, Sydney. Tel. B 3877.

ARGYROL BRAND SILVER VITELLIN
TRADE MARK REGISTERED

ADEQUATE STOCKS OF

ARGYROL

ARE OBTAINABLE FROM PHARMACISTS EVERYWHERE

The specific uses of ARGYROL, its physico-chemical properties, and the technique of its employment are indicated in such conditions as:—conjunctivitis, cystitis, prostatitis, sinusitis, otitis media, head colds and pharyngitis. The facts disclosed have been compiled from actual clinical data.

The fundamental characteristics of ARGYROL, as opposed to other so-called mild silver proteins, are:—

A In respect to the concentration of its silver ions. No other silver protein has so fine a colloidal dispersion or so active a Brownian movement as ARGYROL.

B Its pH and pAg are carefully adjusted to the treatment of delicate mucosal surfaces.

C Its bacteriostatic, detergent and inflammation dispelling properties have never been duplicated. ARGYROL is mild and non-irritating regardless of the concentration in which it is employed; it is also non-toxic.

ARGYROL
Brand
Silver
Vitellin
1 oz. net weight
Made in U.S.A.
from the Laboratories of
A.C. Barnes Company
New York, U.S.A.

Sole Distributors:

FASSETT & JOHNSON LTD.
36/40 CHALMERS STREET, SYDNEY, N.S.W.
or LEVY BUILDING, MANNERS STREET, WELLINGTON, N.Z.

There is NO Chemical Equivalent for ARGYROL

The fundus of the sac is picked up with a hæmostat, and the sac is freed by being stripped with gauze on the finger and by occasional touches with the scalpel. When the sac is freed as far as possible, it is opened at the fundus, and a finger is inserted and used as a foundation on which to strip with the finger of the other hand. The sac must be freed until the area above the neck is clear, as indicated by its collar of extraperitoneal fat. This area above the neck is transfixed with two separate sutures of silk. These sutures are passed from either side, and each pierces the sac so that about three-quarters of the sac is enclosed in each bite and the sutures are so placed that they interlock. These sutures are tied and a second single transfixion suture is tied just distal to the first. The redundant portion of the sac is removed. On excision of the sac the stump will retract deep down, and this is the first reason why the sac must be tied high. The second reason is to ensure that all the sac is removed.

The incised cremasteric fascia is now united with a few interrupted silk sutures cut directly on the knot. In the freeing of the sac up so high, there is one important fact to remember: often the bladder is closely opposed to the neck of the sac, particularly in the case of large herniæ. Unless this is remembered and care is displayed, troublesome hæmorrhage may occur from veins on the bladder wall. If the bladder cannot be identified and abnormal hæmorrhage occurs, then it is certain that the bladder wall is being traumatized. Do not expect to see rich red muscle fibres; the fibres are pale and anæmic, and close inspection must be made in order to identify them as muscle. Should excess hæmorrhage occur, then nothing further is done until it has been absolutely controlled (this control is sometimes difficult). If hæmorrhage is not controlled, a frequent result is the development of a large extraperitoneal hæmatoma, which takes many weeks to absorb and often suppurates. A scalpel should never be used in this area, otherwise puncture of the bladder will result. The danger of puncturing the bladder is not in committing it, but in not recognizing that it has been done. If the bladder is cut into, the opening is doubly sutured and at the conclusion of the operation an in-dwelling urethral catheter is inserted and left for seven days, fluids are "pushed" and a sulphonamide is given.

The next step is completely to free the under-surface of the conjoint tendon from the transversalis fascia until it can be grasped as a separate entity. This freeing of the conjoint tendon is important, for in most cases it permits the tendon to be sutured to the inguinal ligament without tension. The two points of weakness in this area are at the internal ring and just lateral to the pubic tubercle; the repair must aim at strengthening these two points.

The first step is to strengthen and tighten the transversalis fascia. This is done either by a purse-string suture or by interrupted silk sutures. The internal ring is now narrowed by interrupted sutures placed on the infero-medial surface until the ring is comfortably tight and admits only the tip of the finger.

The next detail in technique is to suture the neighbouring lateral border of the rectus sheath, the area of the *linea semilunaris*, to the periosteum of the pubic tubercle. The needle must be felt to bite in and the suture grip hard. This is the most important stitch in the whole repair. It fixes the most medial point of the conjoint tendon and relaxes the rest of the tendon, enabling it to be sutured to the inguinal ligament without tension. Rarely it will be found in placing this stitch that the tension is too great; if so, the suture must be taken out, and a semilunar fold of the anterior rectus sheath hinged on the lateral border of the muscle must be brought down and sutured in a similar way to the periosteum of the pubic tubercle and the commencement of the inguinal ligament. This effectively shuts off the weak point in this area.

Vertical mattress sutures of silk are then used for the repair. The fibres of the inguinal ligament run longitudinally. Thus sutures must not be inserted parallel to the fibres, but across them; otherwise they will tear out, split, mutilate and weaken the ligament, and so weaken the repair. The second important point in the application of these sutures is that they must be tied on the distal surface of the inguinal ligament—that is, on the femoral triangle side. This permits the conjoint tendon to be brought into the greatest possible contact with the inguinal ligament, and the sutures can be tied more securely and a sounder repair results. The conjoint tendon is stitched to the inguinal ligament by interrupted sutures until it fits snugly under the cord emerging from the internal ring. One or two sutures are now inserted above the cord uniting the internal oblique to the inguinal ligament. This is an important step in strengthening the internal ring, for the repair is now firm all round the emerging cord. In all, about seven sutures are required.

The two nerves are now replaced and the external oblique is repaired with interrupted "figure of eight" sutures. The external oblique may be redundant; this is often the case in big hernia. If this is so, it is overlapped after the method of Mayo. If it is considered that the repair should be further strengthened, fascial strips should be used from the external oblique and plaited into the repair. This method of using the external oblique fascia will be described later.

This is the modified Bassini operation which the writer considers should be performed in all cases in which the operation is indicated.

Direct Hernia Repair.

Except for the method of dealing with the sac the operation of repair for direct hernia is the same as the modified Bassini operation described. An ever-present danger in these herniæ is the close proximity of the bladder; but despite this close association the sac must be completely freed until the surrounding peritoneum is taut. If hæmorrhage occurs (which it often does), nothing further is done until it is controlled. If the sac is large, it must be treated in the same way as an indirect sac, and the redundant portion must be removed. Occasionally it is found that when the sac is freed it is small. In these cases the sac should be opened, surrounded by a purse-string suture under direct vision and then invaginated.

It is of the utmost importance in dealing with a direct sac to see whether there is an indirect extension into the base of the cord. If so, the two sacs are converted into one large direct sac by pulling the indirect out into the direct sac. On no account are the inferior epigastric vessels to be divided, as is advocated by some surgeons. They form an important stanchion in the strength of the posterior wall.

In the case of large scrotal herniæ of the indirect type (the sacs of which are adherent and thickened), after the repair has been performed, the bottom of the scrotum must be opened and a tube inserted to provide drainage, for these herniæ often ooze after operation. If drainage is not provided, blood or serum tracks down into the scrotum, the hæmorrhage being concealed. A scrotal hæmatoma will result, which may reach an alarming size, burying the penis. If adequate drainage has not been provided and this complication occurs, the blood must be rapidly aspirated. But blood clots quickly, and usually by the time the trouble is discovered aspiration is impossible because of soft clot. The only thing to do then is to incise the bottom of the scrotum, turn out all clot either mechanically or by flushing with saline solution, and establish drainage. In elderly men with large herniæ it is justifiable to remove the testis and cord in order to obtain a sounder repair. The patient should always be warned of this possibility before operation.

Gallie's Operation and Fascial Repair.

In the opinion of the writer there is no place in hernia repair for the operation practised by Gallie. There are several objections to the operation. The method of getting the fascial strips is unnecessary and time-consuming, and time is a factor in recurrence. The fasciotome should never be used, as it leaves a weakness in the thigh despite assertions to the contrary by its advocates. It causes a muscle hernia which is unsightly and constitutes a weakness. Hæmorrhage cannot be controlled, and a hæmatoma sometimes occurs. A final objection is that some patients for long afterwards complain of pain over this area. A first axiom in surgery is never to replace one wrong by another.

If the surgeon wants to take fascia from the thigh, he should do it by the open approach. He should cut down on the fascia, strip off the required amount, then suture the gap in the muscle sheath so that no harm will result. This method of obtaining fascia is seldom, if ever, needed. In the case of large herniæ of long standing, when the tissues are stretched, attenuated and distorted, a fascial repair should be used in addition to the modified Bassini repair; but a fascial repair should not be used alone. In these cases the external oblique is always redundant, and this muscle will provide all the fascia that is required. A long skin incision is used in the direction of the fibres of the external oblique, the repair is performed as advocated, and strips of fascia are then obtained from both upper and lower borders of the tendon. These strips must be left anchored at one end. The beginning of the suture is thus anchored, greater security being obtained with no waste of fascia. The strips should be thin enough to be threaded through a large non-cutting needle, and they should be darned into the modified Bassini repair already performed. Their insertion must be through the conjoint tendon and inguinal ligament anterior to sutures used in the Bassini repair. If this is done, the inguinal ligament will not be mutilated, a double repair will be effected and added security will be given. Fascial sutures must never be inserted under tension. The Gallie needle should never be used for introducing the fascial strips; it is cumbersome, it has a cutting point, it is far too big, and it irretrievably damages the inguinal ligament and is one cause of weakening the abdominal repair.

It is impossible in some cases to diagnose the type of hernia, and operation alone will reveal whether the hernia is indirect or direct. It is well to remember also that in older people if bilateral hernia is present it is usually direct. As a final injunction, the successful repair of a hernia is a difficult operation. The patient with a hernia is not a guinea-pig on whom the budding surgeon should learn the first principles of surgical practice.

Surgical Treatment of Hernia in Australia.

Hernia is a common condition, and post-operatively requires a prolonged period of rehabilitation. Loss in wages, expenses incurred, compensation and loss of effective working hours are considerable. The importance of securing a permanent cure at the first operation is thus evident. In Australia most general practitioners carry out their own hernia operations, and this form of surgery is not the sole prerogative of specialist surgeons. The operation performed is invariably a Bassini modification, and the results represent the individual efforts of many surgeons—good, bad and indifferent. The following figures are offered for contemplation, in order that the importance of this condition may be appreciated. The operations were performed in only one of the many military hospitals in Australia—a hospital to which the writer was attached.

Seven hundred operations were performed, of which 52 were for recurrent herniæ—a percentage of 7·5. Whilst not a strictly accurate assumption, it can be stated that this figure of 7·5% approximately represents the recurrence rate in Australia, where the Bassini operation is universally performed for all herniæ except those not associated with anatomical distortion of tissue planes. Further, the recurrence rate in troops is probably higher than in civilians, because of the increased severity of their work. In this case the percentage recurrence rate in civilians is probably lower. These figures are striking from another viewpoint. Seven hundred hernia operations, performed in one hospital over a period of eighteen months, meant the complete immobilization of a full battalion of men for a period of three months. If the whole Australian Imperial Force is considered—and, further, the whole Allied services—the loss of fighting personnel from this condition alone is appalling.

Table II.

Period.	Inguinal Hernia Operations.	
	Primary Hernia.	Recurrent Hernia.
January 7 to December 31, 1943 ..	419	41
January 7 to June 30, 1944	229	11
Total	648	52

In the Australian Imperial Force the approximate recurrence rate is 7·5%. In the civilian populace it is probably lower. How, then, can the opponents of Bassini fairly insist that his operation be discarded?

Summary.

1. The aim of this paper is an attempt to answer the critics of Bassini.

2. The evidence given by the opponents in condemnation of the operation has been considered in detail.

3. Reasons have been given for retention of the operation—reasons built on the sound foundation of anatomy, physiology and results.

4. Herniæ in general have been discussed and a form of treatment has been recommended.

Conclusion.

The Bassini operation must not die. It must be retained in surgery until such time as the ideal is found. To abandon the operation would be a retrograde step in the repair of herniæ, and recurrences would inevitably increase.

Acknowledgement.

This paper is published by permission of Major-General S. R. Burston, Director-General of Medical Services, Australian Imperial Force.

THE SALIVA FACTOR IN PEPTIC ULCERATION.

By L. J. J. Nye,
Brisbane.

In the ætiology and treatment of peptic ulcer many theories have been advanced and have had enthusiastic support for some years, but eventually have been discarded because they have failed to stand up to the therapeutic test. It is, however, now believed with good reason that ulcers are caused by peptic digestion of the gastric mucosa by the hydrochloric acid of the gastric juice. The question which must be asked is, why does the mucosa in certain subjects at certain times lose its capacity to defend itself against this ever-present and natural secretion? Is it due to some factor or factors in the lives of these subjects which cause an increase in the production of hydrochloric acid? Is it due to alteration in the quantity and quality of the protective mucus which is adherent to the mucosa? Is it some pathological process or decreased resistance in the mucosa itself? Is it caused by eating coarse food too rapidly, or do all the above-mentioned factors play a part?

It is well known that many sufferers from duodenal ulcer have been in the habit of "bolting" their food, and it is of interest to speculate whether this may be one of the ætiological factors, for in addition to failure to pulp the food, there is insufficient time for it to become mixed with saliva. The pulping of the food with the teeth is not the only purpose of chewing; the thorough mixing with saliva plays a much more important part in digestion than is usually believed. It is well known, for instance, that persons fed through a gastrostomy tube digest their food better and gain in weight if the food is first chewed in the mouth and mixed thoroughly with saliva before being injected into the stomach. Moreover, many dyspeptics know that, if they eat mince meat, it is not well tolerated unless it is well mixed with saliva before being swallowed. Another interesting observation is that most people can obtain relief from heartburn, flatulence and hyperacidity merely by swallowing saliva.

This suggests that the saliva factor in dyspepsia is worthy of more careful consideration than has been given to it in the past. It has not been fully established how saliva aids in digestion. It is believed that in the actual process of digestion saliva plays an insignificant part. There are no enzymes in saliva that could convert proteins or fats into absorbable forms; but polysaccharides are converted to disaccharides by the ptyalin.

Opinions have been put forward suggesting the presence of some hormone in saliva which has some regulating effect on carbohydrate metabolism as well as some influence on gastric secretion; but the evidence presented in favour of this hypothetical hormone is conflicting.

It is possible that mucus is an important factor. There is a variable amount of mucin in saliva, and although it is not known how it acts, mucin has been shown to be an important aid in the treatment of peptic ulceration. Possibly it has direct action on the secretory tubules as well as a neutralizing effect.

It must be remembered also that the gastric mucosa is covered by a protective layer of viscous tenacious mucus with a pH between 4·0 and 7·0; this protects the mucosa from the highly acid gastric juice, which has a pH of perhaps less than 2·0. There is also a certain amount of evidence to show that in peptic ulcer patients an inadequate amount of mucus is secreted, both in the gastric mucosa and in the saliva. Wolf and Wolff,(1) working on their man with a permanent gastric fistula, showed the importance of mucus in controlling gastric acidity and preventing ulceration. They found that, when the mucus secretion was continuously removed by suction from the wall of the stomach, there soon appeared a tiny erosion which rapidly developed into a typical peptic ulcer. If mucus was allowed to flow again on this surface it would soon heal.

The recent work on lysozyme, which is a powerful bacteria-dissolving substance found in egg white and saliva, suggests that it may serve the important purpose of defending the gastric mucosa against bacterial invasion. It is significant, too, that the amount of lysozyme in the saliva varies not only in different subjects, but in the same subject at different times.

The neutralizing effect of the salivary fluid is also important. In a series of 22 patients with dyspeptic symptoms it was found that the pH of fasting gastric juice varied between 4·2 and 6·9, the average being 5·4. The pH of the saliva taken at the same time varied between 6·1 and 6·9, the average being 6·5, and in all cases the salivary pH was higher than that of the gastric juice.

The salivary glands have both sympathetic and parasympathetic innervation. The flow of saliva is not continuous, but is regulated by the nervous system and depends on certain food, chemical and emotional stimuli. It is a matter of common experience for the mouth to become moist at the smell of food or dry during certain emotional states. Wolf and Wolff found the average accumulation of saliva during the three hours of a "control" morning was 40 millilitres; but one day, when the subject was depressed, it was only 10 millilitres, and later, during a day of intense resentment, it was 72 millilitres.

Babkin(2) refers to Baxter's work in his laboratory; Baxter, after section of the auriculo-temporal (secretory) nerve root, found that the salivary glands were able to secrete saliva nearly normal not only in quantity, but also in chemical composition. Babkin then makes the following statement:

> It would be risky to suggest that the sympathetic supply is alone responsible for such remarkable and specific actions on the part of the glands to different stimuli. It seems more likely there are other nerve channels through which parasympathetic impulses may reach the glands.

Babkin further states that in certain circumstances the sympathetic and parasympathetic nerves act not antagonistically but synergically.

In animals undoubtedly there are positive salivary conditioned reflexes (alimentary, sexual *et cetera*) which increase or decrease the response of the glands to certain stimuli. In dogs the ordinary phenomenon is the inhibition of salivary secretion in case of fear and even at the sight of anything unusual (the so-called "orienting" reaction).

However it acts, there is evidence to show that more consideration should be given to the question of the quantity, quality and effective utilization of saliva in the dyspepsias. In order to take full advantage of certain qualities inherent in saliva, it would appear that in the treatment of all dyspepsias the thorough mixing of all food with saliva is essential and alkaline lozenges should be effective not only for their neutralizing effect, but because they stimulate a flow of saliva which also has an antidyspeptic effect, for it has been shown that the presence of alkali in the mouth evokes a copious secretion of saliva rich in mucin, and the act of sucking also increases the flow.

I have experimented with satisfactory results with lozenges made of calcium carbonate, magnesium carbonate, sodium citrate and sugar. Not only do they give relief in hyperacidity, heartburn and flatulence in most cases, but the amount of alkali needed for this purpose is much less than when the usual alkaline powder is used. Furthermore, the lozenges are a much more convenient form of medication, as they can be carried in the pocket or kept in a box at the bedside.

Conclusion.

This article does not claim to have propounded any new definite conclusions. It merely submits a theory which it is believed may add something to the knowledge of treatment of dyspepsia and peptic ulceration and may serve as a stimulus to further experimentation.

References.

(1) S. Wolf and H. G. Wolff: "Human Gastric Function".

(2) A. Babkin: "Secretory Mechanism of Gastric Glands", page 520.

* * *

Reports of Cases.

AN IMMUNE ANTI-M ISO-AGGLUTININ IN HUMAN SERUM.

By R. J. WALSH,
Major, Australian Army Medical Corps,
Australia.

THE agglutinogens M and N are of medico-legal interest, but are not usually considered in blood transfusion work. The anti-M and anti-N iso-agglutinins are only rarely found in human serum. The anti-M agglutinin has been reported on seven occasions and the anti-N agglutinin once. Wiener(1) states that in four instances the anti-M agglutinins were of natural occurrence and were not produced by iso-immunization. The references to these reports are not available to the writer. Wiener and Forer(2) have recorded the finding of a serum which contained an anti-M agglutinin as well as an anti-Rh agglutinin. Clinical details of this patient are not recorded, but Wiener(1) states that the agglutinins were produced as a result of iso-immunization from blood transfusion. Wiener(3) reported a further patient, a woman, in whose serum an anti-M agglutinin was found. This patient had received a transfusion of blood one month previously, and no abnormal agglutinin was detected at the time. The patient described by Paterson, Race and Taylor(4) had never received a transfusion of blood, and although she had four children, none had suffered from hæmolytic disease of the newborn. The four children all possessed the agglutinogen M. The serum in which the anti-M agglutinin was detected was obtained from the mother four months after the last child was born. It is impossible in this case to determine whether the anti-M agglutinin was natural in occurrence or whether it was produced by immunization of the mother with the fœtus's red blood cells during pregnancy.

Singer(5) has reported the only serum in which an anti-N agglutinin has been found; he considers that the agglutinin was the result of iso-immunization following a transfusion of MN blood seven days previously. As the agglutinin in this case could not be detected by the usual methods of cross-matching, there would appear to be little justification for the assumption. The anti-N agglutinin could have been of natural occurrence.

A further instance of a human serum containing an anti-M agglutinin is now reported. Although there is no absolute proof, it seems probable that the agglutinin resulted from iso-immunization.

Clinical Record.

The patient, a female, aged sixty-two years, had suffered since 1939 from a blood dyscrasia diagnosed as pernicious anæmia. Since that time response to liver and iron therapy had been unsatisfactory, and between 1939 and 1943 she received at least seven blood transfusions. No details of these transfusions are available; but the blood donors have been compatible on all cross-matching tests. Difficulty of administration has been frequently encountered, as the patient's superficial veins are extremely small. Her elbows, forearm and legs have numerous scars due to incisions over the veins. In June, 1943, she received three transfusions of blood. The first was discontinued after 200 mils had been administered because of a rigor; 600 mils of blood were given on the second and third occasions, the second transfusion being without incident and the third associated with a slight transient rigor. On February 15, 1944, she was again admitted to hospital with a remission of anæmia, and was given blood transfusions on two occasions. The second transfusion was administered intrasternally, because no suitable vein could be found. After 400 mils had been given the transfusion was discontinued, because the patient became cold, broke out into a sweat and complained of pain in the chest. No jaundice was noted and no hæmoglobinuria was found. A further transfusion was contemplated on March 13, 1944, but a gross incompatibility was detected on cross-matching tests with blood of a homologous group.

Investigation.

An investigation was carried out. Blood was obtained with difficulty from a vein. A suspension of red blood cells in 2·6% sodium citrate solution was made and serum of icteric tinge was separated. When the cells were tested, the patient's blood was found to belong to group A, subgroup A_2, and to group N, and the cells were Rh-positive. Her serum agglutinated all group B cells and the majority of group A cells, both subgroups A_1 and A_2, and group O cells that were available. The Rh factor could not have been involved, because some Rh-negative as well as Rh-positive cells were agglutinated. Agglutination was distinct to the naked eye, and large clumps of agglutinated cells appeared within five minutes of the mixing of the serum and cells on a slide at room temperature. It was also obvious when the mixture was made in test tubes and incubated at 37° C. The serum was then mixed on a slide with equal parts of a citrate suspension of red blood cells of the following known constitution:

OMN Rh+	4 samples, all positive (+)
OM Rh+	4 samples, all positive (+)
AM Rh+	1 sample, positive (+)
OM Rh−	1 sample, positive (+)
ON Rh+	5 samples, all negative (−)

By the application of Fisher's formula (quoted by Paterson, Race and Taylor) $\frac{a!\ b!}{n!}$, where a represents the number of positive reactions and b the number of failures to react in a total number n tested, it can be calculated that the odds in favour of the antibody's being anti-M are 3,002 to one.

Complete absorption of the antibody was effected with an equal volume of washed OM cells. This absorbed serum did not agglutinate M or MN cells. The antibody was titrated against OM and OMN cells by allowing a mixture of the cells and serially diluted serum to remain in contact for one hour at room temperature. Readings were made with the naked eye after the cell-serum mixtures had been transferred from tubes to a flashed opal glass slide. The titre was found to be 1 in 32 in both instances.

Discussion.

It seems unlikely that the anti-M agglutinin could have been of natural occurrence, since in that case it would almost certainly have been detected earlier in cross-matching tests. If, however, it was present in small amounts and was overlooked, it must certainly have increased in titre as a result of immunization. It appears much more probable that the agglutinin was the direct result of iso-immunization from previous transfusions, but the blood groups of previous donors are not known. It is statistically improbable that all belonged to group N. The possibility that the antigenic stimulus was provided by a fœtus—the only two pregnancies had occurred forty-six and thirty-two years earlier—cannot be overlooked; but it is not at all likely that an immune antbody would have survived in the blood stream for thirty-two years. There is no evidence that either child suffered from hæmolytic disease of the newborn.

Acknowledgements.

The assistance of Dr. A. H. Tebbutt is gratefully acknowledged. Facilities for the investigation were provided by the New South Wales Red Cross Blood Transfusion Service. The Director-General of Medical Services has given permission for publication of the report.

References.

(1) A. S. Wiener: "Blood Groups and Transfusion", Third Edition, 1943.

(2) A. S. Wiener and S. Forer: "A Human Serum Containing Four Distinct Iso-Agglutinins", *Proceedings of the Society of Experimental Biology and Medicine*, Volume XLVII, June, 1941, page 215.

(3) A. S. Wiener: "Hæmolytic Transfusion Reactions: Prevention, with Special Reference to the Rh and Cross Match Tests", *American Journal of Clinical Pathology*, Volume XII, June, 1942, page 302.

(4) J. L. Hamilton Paterson, R. R. Race and G. L. Taylor: "A Case of Human Iso-Agglutinin Anti M", *British Medical Journal*, Volume II, July 11, 1942, page 37.

(5) E. Singer: "Iso-Immunization against Blood Factor N", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, July 10, 1943, page 29.

Notes on Books, Current Journals and New Appliances.

THE COMMODORE.

We have at last been privileged to make the acquaintance of that versatile sailor, Captain Sir Horatio Hornblower, R.N., and we feel that the introduction has been too long delayed.[1] In fact, it is almost impossible to believe that the gallant captain is an apocryphal figure. In his book, C. S. Forester has skilfully outlined a background of international politics, life at sea and military operations, beginning a short time before Napoleon Buonaparte's fateful attack on Russia. Hornblower is given a delicate mission in and around the Baltic, and, as commodore in command of a squadron of the Royal Navy, sets out to carry it out. It is unnecessary to go into detail of how he does so; Captain Sir Horatio Hornblower, we learn, is famous for ingenuity and luck. The characters are living people and the tale is exciting and well told; but obviously it is merely the vehicle by which the reader is given a true appreciation of the very human and lovable hero. To his comrades and subordinates he appears a man of unswerving decision and iron will; we are privileged to observe the mental and emotional processes which go on behind the scenes—to know how this outwardly rock-like man conquers his genuine fear of the huge responsibility that is laid upon him. At the close of the book, Hornblower, his mission accomplished with something more than the success expected of him, is left, obviously about to suffer from a serious illness, which may be plague. Let us hope that Mr. Forester will take pity on his readers and not leave them in suspense for another six years—the period that elapsed between the previous "Hornblower" novel and "The Commodore".

---

[1] "The Commodore", by C. S. Forester; 1945. Sydney: Angus and Robertson, Limited; London: Michael Joseph, Limited. 7¼" × 5", pp. 270. Price: 8s. 6d.

shortens *healing time*

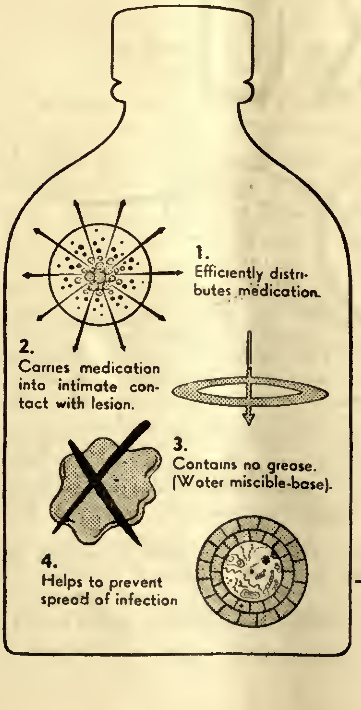
FOR IMPETIGO CONTAGIOSA

Two types of impetigo contagiosa of Tilbury Fox can be differentiated, the streptococcic and the staphylococcic. A third mixed type has also been suggested, caused by the combined action of streptococci and staphylococci.

While the streptococcic type of infection responds to ointments containing ammoniated mercury, those of the staphylococcic type frequently fail to improve on these ointments. For the latter type drying lotions are superior.

Alulotion, Ammoniated Mercury with Kaolin—Wyeth, combines the bactericidal action of ammoniated mercury with the drying effect of aluminium hydroxide and kaolin. It is a clean, effective treatment for all types of impetigo contagiosa. Clinical evidence has shown that Alulotion cleans up impetigo contagiosa in less time than older methods.

This unique water-miscible lotion can also be prescribed effectively in the treatment of various other skin infections such as ecthyma, folliculitis and the secondary infections associated with eczema, seborrheic dermatitis and dermatitis due to irritants.


1. Efficiently distributes medication.
2. Carries medication into intimate contact with lesion.
3. Contains no grease. (Water miscible-base).
4. Helps to prevent spread of infection

ALULOTION

AMMONIATED MERCURY with KAOLIN

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

AL5M

THREE IMPORTANT USES OF

ADEXOLIN

GL

1 Ten drops daily of Adexolin Liquid for the infant ensure normal dental and skeletal development and build up general resistance.

•

2 Twenty drops of Adexolin Liquid daily during pregnancy safeguard the mother against dental caries, the child against rickets, and both against infection.

•

3 Up to twenty drops of Adexolin hourly during the initial stages of fever, increase resistance. At the later stages, Adexolin in smaller doses supplies the fat-soluble vitamins lacking in low-fat diet.

★ Each c.c. of Adexolin Liquid contains 12,000 i.u. of vitamin A and 2,000 i.u. of vitamin D.

Available in 14 c.c. phials and 2 oz. bottles.

GLAXO LABORATORIES (AUST.) PTY. LTD.
Melbourne Sydney

Well-tried and successful dried milk foods, graded to suit bottle-feeding requirements from birth to weaning

GLAXO

NUMBER NUMBER
1 & 2

THE formula of Glaxo No. 1 approximates to that of human breast milk. Both the fat and protein content are diminished to suit the digestive capacity of the infant during the first months of life. It is also suitable for premature and weakly babies.

Glaxo No. 2 contains a higher proportion of fat and protein and is designed for the feeding of infants whose dietetic requirements are no longer satisfied by a fully humanised milk food.

The simple change from Glaxo No. 1 to Glaxo No. 2 provides for the progressing needs of the growing infant without causing any digestive disturbance.

The declared content of vitamin D in Glaxo is a warrant that proper regard is paid to the importance of calcium metabolism. The incorporation of both vitamin D and iron in measured amounts provides factors which build not only for the present but for the future.

Constancy of composition and the greatest possible freedom from bacteria are accepted features of Glaxo.

Both forms of Glaxo are sold in sealed and dated tins in 1-lb. and 3-lb. sizes.

GLAXO LABORATORIES (AUST.) PTY. LTD., MELBOURNE AND SYDNEY

The Medical Journal of Australia

SATURDAY, JANUARY 26, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE RETIREMENT OF SURGEON CAPTAIN W. J. CARR.

EVERYONE will agree that the head of a service, particularly of a medical service, sets the standard of efficiency and devotion to duty of its members. This has been shown over and over again in the war to which we refer as having just ended. Australian doctors have good reason to be proud of the medical services of the sea, land and air which they joined willingly and in such large numbers. That they will acknowledge their own and the country's indebtedness to the medical directors there is no shadow of doubt. Of the three services, that of the Navy is the only one which before the war could be said to have a staff of permanent medical officers. In 1933 the Royal Australian Naval Medical Service had 28 medical officers; of these, 15 were permanent officers, 11 belonged to the Royal Australian Naval Reserve, one belonged to the Royal Australian Naval Volunteer Reserve, and one was on loan to the Royal Navy. It was this service which Surgeon Captain W. J. Carr was called on to control at the outbreak of war. On January 31, 1946, he is to retire from the command. The occasion should not be allowed to pass without comment; Captain Carr has served the Commonwealth and the Empire with the utmost devotion and in the best tradition of the "Silent Service", and this should be acknowledged.

With the outbreak of war the Royal Australian Navy increased its number of ships and the number of its fighting personnel. The number of medical officers increased with the number of ships and men. Security reasons made it undesirable to refer to new ships as they were commissioned, but it may be remarked that the appointments to the navy were promulgated without interruption in the *Commonwealth of Australia Gazette*. In the year 1945 the Royal Australian Naval Medical Service comprised 110 medical officers. Of these, 14 were permanent medical officers; 83 belonged to the Royal Australian Naval Reserve, and six to the Royal Australian Naval Volunteer Reserve; seven were on loan to the Royal Navy. In other words, the administrative duties of the director of the service and his responsibilities had grown enormously. The advent of the Royal Navy to Australian waters threw extra work onto Captain Carr's shoulders. To him was allotted the task of working out the plan for the posting of the British Pacific Fleet's medical establishment in Australia. He made all the hospital arrangements and also those for the supply of medical equipment. This was in August, 1944, and with the smallness of his staff (he has only one medical staff officer) the extra work was no sinecure. Through the six years of war Surgeon Captain Carr has thus carried a steadily growing burden of work and responsibility. The medical profession of Australia and those outside its ranks who have given any thought to the subject cannot understand why no promotion has come to him. By every standard known to the non-naval observer promotion has been earned. In any case it is ridiculous that so important a service as the medical service of the Royal Australian Navy should carry with it no rank higher than that of captain. This rank is the equivalent of colonel in the army. We maintain that Surgeon Captain Carr should on his retirement be promoted to the rank of surgeon-rear-admiral and that the promotion should be dated from January, 1945, when the main body of the Pacific Fleet came to Australia. But whether the parsimonious Royal Australian Navy does what it should do in this matter or not, it should be known in naval and non-naval circles that the medical profession of the Commonwealth holds Surgeon Captain Carr in high esteem, is grateful to him for consistent first-class work, and wishes him peace and contentment in his retirement.

THE JOURNAL AND THE RECENT INDUSTRIAL UNREST.

THE last few months of the year 1945 and January of 1946 have been very difficult for those concerned in the production of THE MEDICAL JOURNAL OF AUSTRALIA. Now that the acuteness of the difficult period has passed, it has been thought that a short statement should be made for the information of readers. At the beginning of the war the manager of the journal was faced with the demand for economy in the use of paper. Certain restrictions were imposed under National Security Regulations in regard to the use of paper and other matters. These have been faithfully observed. There is no need to quote details of the amounts by which paper had to be reduced or of the difficulties in securing an adequate supply of paper. What is important is that readers should appreciate how valuable for them has been the reduction in the size of type which was undertaken in August, 1940. An eight-point type was substituted for what had previously been printed in ten-point, and seven-point type for what had been eight-point. The effect of the change in type was that the amount of letterpress available to readers was practically unchanged. As the war progressed and medical officers in the services recorded their observations, an increasing number of contributions were sent to this journal. These papers and the reports on the use of new medicaments and new methods of treatment had often the unfortunate result of creating a long latent period before articles could be published. The dispute in the printing industry which began in September last accentuated all these troubles and difficulties.

When publication was resumed on December 1, 1945, it was quite impossible to make up the loss in the number of issues of the journal, and the issue of December 1 was designated "Numbers 12 to 22 inclusive". After two issues had appeared the strike originating in the mining and ironworkers' industry occurred. At first, since THE MEDICAL JOURNAL OF AUSTRALIA is registered as a weekly newspaper, publication was not affected, but before long the use of electricity and gas for all but daily newspapers was prohibited and publication ceased for a second time. Since work was resumed in the New Year the journals held up by the second interruption of publication have been published as quickly as possible and it is hoped that normal running will continue.

In spite of the large hiatus in the latter months of 1945, the volume for the second half of that year included 516 pages. When we remember that Volume II of 1943 contained 532 pages of reading matter with 25 pages of supplement, the second volume for 1945, affected by the large hiatus, does not appear so discreditable. Before the break last September the intention was to return to the use of ten-point and eight-point type in January, 1946. This change-over has been postponed and in a week or two some additional pages of reading matter will be published in each issue. In this way some of the accumulated material will appear. The return to larger type will be made as soon as conditions justify the change. In the meantime it is hoped that readers will continue their forbearance with the war-time type.

Current Comment.

THE RESULTS OF PREFRONTAL LEUCHOTOMY.

IN May, 1944, a good deal of space was given in these columns to the subject of psycho-surgery. The development of the operation of prefrontal leuchotomy, or prefrontal lobotomy, was traced and special reference was made to work by W. Freeman and J. W. Watts. It was pointed out that, though in certain circumstances the patient's condition was improved and he was able as a result of the operation to lead a more or less equable life, the condition produced was final—"once one cuts, there is no return". The general conclusion stated was that the place of the method in the treatment of persons suffering from abnormal mental states had not been determined and that the greatest caution should be displayed in the selection of patients to be subjected to it. For these reasons it will be of interest to refer to two recent reports on the results of the operation.

The first report is based on 100 cases and is by F. Berliner, R. L. Beveridge, W. Mayer-Gross and J. N. P. Moore, who write from the Department of Clinical Research, Crichton, Dumfries.[1] At the time when these authors wrote, the first fifty of their one hundred patients had been operated on for at least fifteen months and it was concluded that the outcome in these cases was more or less settled. The second fifty had been operated on for less than fifteen months, some of them for less than two months, and consequently the results could not be regarded as final. The series included 49 male and 51 female patients; the average age was 36 years and the range 19 to 53 years. The criterion for the selection of patients for operation was the presence of a clinical picture of "mental tension"—a concept which, we are told, is hard to define. "It may be thought of as a persistent emotional change sustaining and to some extent determining the clinical picture. Such a change is always of an unpleasant quality, invariably distressing, and sometimes intolerable to the patient. Its presence is shown by irritability, rage, fear, or other forms of emotional excitation; insomnia, and on the motor side, restlessness, aggressiveness, destructiveness, or impulsive behaviour." Of the 100 patients, 88 suffered from schizophrenia (54 were catatonics); the remainder included four patients with melancholia, five with severe obsessional states, two epileptics and a general paretic, who, after fever treatment, developed chronic hallucinations. Judged by ordinary prognostic standards, all the patients were hopeless chronic invalids. All of them had failed to respond to treatment other than operation. Of the patients with schizophrenia, 24 are described as "recovered", 13 as "much improved", and 23 as "improved". Of the four with melancholia, one fell into each of these three groups, and the fourth died. Of five with obsessional illness, four "recovered" and one was "much improved". These workers point out that it is unwise to evaluate the results of a new form of therapy without controls, but they regard their results as encouraging and add that they fully warrant the use of the operation in suitable cases. With this most readers will agree.

The second report comes from S. D. Porteus and R. De M. Kepner, of the Psychological Clinic of the University of Hawaii. It deals with twenty patients who have been treated at the Territorial Hospital for Mental Disorders, Hawaii, where Porteus is the psychological consultant and Kepner the clinical director. The operations were performed by R. B. Cloward, consultant neurosurgeon of the institution. The report is a monograph of 115 pages. (It has also been published in *Genetic Psychology Monographs*, Volume XXIX, 1944, page 3.) The detailed histories of the twenty cases are so full of interest that they will be read, or should be read, by all psychiatrists interested in the subject. Porteus and Kepner examined their subjects by psychological tests; they used a modification of the Binet test and also the Porteus maze test. In some instances the results of the tests did not favour operation, but since there were no established criteria for the selection of patients, operation was carried out in spite of the findings. Eleven of the twenty patients studied manifested some degree of improvement; two improved to such an extent that they were able to be released from hospital. In nine of the eleven cases the psychological recommendation "on the basis of present experience" would have been favourable to operation. In seven of the nine cases in which no improvement occurred, the recommendation would have been adverse. This means that in 16 of the 20 cases the prognosis based on various psychological considerations was justified. Porteus and Kepner think that with more experience the percentage of accurate prognoses would increase. They state the following guiding principles in selection:

> 1. The elimination from the list of prospective lobotomy patients of the mentally defective on the ground that the operation cannot put into the brain what was never there.
>
> 2. The elimination of the mentally deteriorated on the grounds that the operation cannot restore what is already lost.
>
> 3. A reasonably high maze test record is a favorable sign, the reason being that, if planning capacity is diminished, as it almost certainly will be after operation, the individual will retain enough to enable him to function satisfactorily in community life.
>
> 4. One conclusion, admittedly somewhat tentative, is that hebephrenia should be considered a contraindication for operation. This feature of behavior is probably to be interpreted as an emotional retrogression, similar in its unfavorable implication to mental deterioration.

---

[1] *The Lancet*, September 15, 1945.

> 5. Theoretically, certain catatonic types, because of the strong tendency to stereotyped reactions in post-lobotomy behavior, would also not be considered good prospects.
>
> 6. Another presumption is that manic-depressives exhibiting cyclical changes in mood are not good risks. The operation cannot be expected to bring about opposite results in the same patient.
>
> 7. One commonly dependable post-operative index of the surgical adequacy of the operation is decline in maze test ability. The results of several reoperations will show whether this indication is completely reliable.

Porteus and Kepner have found that the general diagnostic label is not of great assistance in the selection of patients for operation. Their group of patients does not represent fairly the types for whom lobotomy is recommended and they point out that success has been attained in various types of psychosis. One point of considerable interest is that among the criminal insane operated on were three individuals whose collective convictions included three killings and five stabbings. The condition of all three was improved and one was discharged as being no longer a menace to the community.

It would be possible to discuss both these reports in much greater detail, but for our present purpose this is not necessary. Two points should be mentioned. The first is that apparently social adjustment after this operation has been performed may take a considerable time. Freeman and Watts, who are probably more entitled than any other workers to express an opinion, have described the process of adjustment as slow and as extending even into the second year afer operation, or longer than that. The second point is that sometimes a second operation may be needed if the first has not done what is to be expected. This is an aspect that will probably be discussed by future workers. In the meantime all who are interested in the subject will agree with Porteus and Kepner that the application of the procedure should not become widespread until careful and continued psychological and psychiatric studies of its effects have been undertaken. There is something to be said for their idea that a neuropsychological institute should be established where such investigations could be carried out, though others will hold that a special institution is not required.

POST-WAR GERMANY: A PSYCHIATRIC PROBLEM.

In April, May and June, 1944, there took place a conference at the College of Physicians and Surgeons, Columbia University, New York City, on "Germany After the War". The participants in this discussion represented a wide selection from experts in anthropology, sociology, psychology, psychiatry, education, economic and political science and other studies. The conclusions reached were presented and individual sections discussed at the annual meeting this year of the New York Regional Division of the American Orthopsychiatric Association. An excellent account of the deliberations has been published.[1] The analyses given and the recommendations submitted make rather grim reading, for the seriousness of the situation in the Germany of today and the Germany of tomorrow is disclosed with convincing realism of detail. There can be no question that Americans have been profoundly shocked at the change which Germany underwent between the two world wars. For many years Germans had been excellent colonists in the United States of America, industrious and intelligent and soon imbibing the American spirit; furthermore, American intellectuals sought inspiration from German universities and many looked upon Germany as their spiritual home. It is true that Germany resorted to harsh measures in World War I, but these were of military origin and purpose and had what excuse military operations can claim. Then came the promulgation of Nazi doctrine and the horrified Americans, as well as the citizens of the British Empire, discovered in the German people an insulting assumption of racial superiority which did not hesitate at endeavouring to exterminate a whole people, a contempt for democracy, a proclamation of a new order to supersede all previous orders, and the resort to a technique of lies, subterfuges and world-wide spying and infiltration. The conference emphasized strongly the fact that the measures to be taken with post-war Germany must not be confined to the military, political and economic spheres, for most important of all are a psychiatric analysis and based upon this a treatment directed towards an abnormal and deeply entrenched psychology. A whole generation of Germans has been poisoned in moral fibre and in intellectual freedom by cunning propaganda lavished on them during their impressionable years. The boys of the Hitler Youth Movement, who were fourteen to eighteen years of age in 1933, when the toxicity had reached full potency, are now twenty-six to thirty years of age, and it is with these perverted adults that the Allies must deal. In another article in the same journal, "Children under the Nazi System", there is a cold, unbiased, but none the less terrible description of the devilish devices used to win over boys to the doctrine that the master race must be on top and it mattered not by what methods this was attained. Youngsters were encouraged to sneer at old-fashioned parents and to regard the home as of no account; girls were for pleasure and procreation, while marriage was "not a biological necessity". In the main report some concepts are given which Germans tenaciously hold and which have been causative in the headlong rush into degeneracy. Chief amongst these are the doctrine of German superiority, the right of Germans to dominate all other groups which must be regarded as enemies, the apotheosis of the military cult and the application of military methods to civil life, and particularly to education. Each of these must be destroyed beyond recovery and the process may take a long time. We are warned that the reaction of English-speaking democracies to any particular form of treatment must not be taken as indicating what the Germans will do in a similar position. The British and Americans would, for example, accept a remission of a penalty with gratitude; the Germans with contempt, as it would in their view imply stupidity or weakness in the victor. In fact, a strong plea is made for "putting the boot in", to use a local expression, in dealing with the conquered Teutons. An illustration which might have been given in this discussion is that after Versailles it was hoped to transform the German army into something different and yet retain the former corps of officers. What happened was that a new German army arose more brutal than the old.[1] If democracy is to be saved, then the German military system must be destroyed to its minutest rootlet. Education must be forcibly overhauled and reformed and freedom should be restored to Press, radio, stage, film and Church. The imposition of a superficial form of democratic government would be of little service so long as the poison remains in the soul of the people. To rebuild German character will be a long business; it may be impossible, but it must be tried. If it fails, then the means of doing harm must be taken away from the nation collectively and individually. The report makes it clear that the problem of post-war Germany is essentially a problem in mental pathology; the country must be shielded from the libido of desperate adolescents whose degenerate actions should be kept under with a strong hand. The reading of these measured analyses and recommendations gives the feeling that there is little hope for betterment in German manhood today, for the poison cannot be expelled or neutralized by an arsenical or sulphonamide drug, nor can the devils be exorcised by kindly treatment. It is to be hoped that the report of these American deliberations will be placed in the hands of the Allied statesmen in whose responsibility the control of Germany now rests.

---

[1] *American Journal of Orthopsychiatry*, July, 1945.

[1] *The Times Literary Supplement*, August 18, 1945, page 387.

Abstracts from Medical Literature.

PHYSIOLOGY.

The Rate of Carbon Monoxide Uptake by Man.

W. H. FORBES, F. SARGENT AND F. J. W. ROUGHTON (*The American Journal of Physiology*, April, 1945) present new data for the rate of carbon monoxide uptake by normal men at sea level, when exposed to air containing various percentages of carbon monoxide (0·01 to 2·0) for various times. The subjects were at rest, engaged in light activity, light work or hard work. A composite chart is given for calculating the average individual increase in percentage of carboxyhæmoglobin in the blood with time, at varying carbon monoxide pressure and varying ventilation rate. Particular individuals may, however, vary consistently by as much as ± 20% from the data in the chart, which may, therefore, in practical cases, often be replaced by much simpler approximate equations given in the text. Variations in the ratio of tidal air to dead space, and in the value of the diffusion constant of the lungs, appear to be responsible for the differences between individuals in the rate of carbon monoxide uptake. The observed rates of carbon monoxide uptake are lower than the average rates of most previous observers: the difference is attributed partly to more accurate estimation of carboxyhæmoglobin (by the Scholander-Roughton technique) and partly to adequate allowance for the blank carbon monoxide already present in the blood before the exposure. Lowering of the total barometric pressure (down to 140 millimetres of mercury) is without effect on the rate of carbon monoxide uptake, provided the partial pressure of carbon monoxide in the trachea is kept constant and correction is made for any increase in ventilation rate due to hypoxia. Increasing the oxygen from 20% to 98% at sea level decreases the rate of carbon monoxide uptake: the effect is more pronounced in hard work than at rest. This decrease occurs because the rate of reaction of carbon monoxide with hæmoglobin is inversely proportional to the oxygen pressure.

The Dehydrating Effect of Continuously Administered Water.

A. V. WOLF (*The American Journal of Physiology*, April, 1945) recalls that other authors have shown that the quantity of water lost in diuresis due to water excess may be greater than the quantity taken in. The author studied this dehydrating effect in man. Ten young subjects were taken and a fixed amount of water varying from 20 to 200 millilitres was drunk every ten minutes. The intake of water was continued for periods up to seven hours. A steady state of water intake under the conditions of these experiments on man results in a total output of fluid larger than the intake, and if continued, leads to the production of negative water loads. The urinary output alone was 8% greater than the intake rate. The ratio of rate of chloride excretion to the rate of excess water excretion is equal to the normal plasma concentration in the steady state, and the equation of steady state is calculated. The threshold of appearance and the threshold of retention are defined and are illustrated for chloride. In renal excretion, the regulation of concentration of plasma chloride takes precedence over the regulation of body volume, when water is drunk.

Use of Cholinesterase in Shock.

R. J. SCHACHTER (*The American Journal of Physiology*, April, 1945) reports that surgical shock was produced in 66 anæsthetized dogs by excessive hæmorrhage or manipulation of the intestines. When permanent shock levels of blood pressure were demonstrated to be present, treatment consisting of restoration of blood volume or of injection of cholinesterase was attempted. The dogs in hæmorrhage shock responded well to beef plasma, administered in appropriate volumes, by recovering from shock. The dogs in traumatic shock were benefited by plasma only temporarily. When the dogs in traumatic shock were given intravenous injections of cholinesterase, the blood pressure nearly always (16 out of 18 dogs) returned to normal and remained there for the duration of the experiment.

Absorption, Distribution and Excretion of Thiourea.

R. H. WILLIAMS AND G. A. KAY (*The American Journal of Physiology*, May, 1945) state that in addition to the recently demonstrated antithyreoidal action of thiourea, the use of this substance in the measurement of renal function and in the estimation of the total body water has been considered. They have modified the methods to allow determination of thiourea in any of the fluids and tissues of the body. They also state that thiourea is rapidly absorbed from the gastro-intestinal tract and is rapidly distributed throughout the tissues and fluids of the body; its concentration in the tissues varies widely. The distribution of thiourea correlates poorly with the water content of body fluids and tissues; the apparent volume of distribution far exceeds the actual content of body water. The substance is broken down in the body in a rapid and inconstant manner. No thiourea is excreted in the stools, but it appears in the urine within thirty minutes of ingestion. None of the substance is usually found in the urine forty-eight hours after cessation of therapy. In patients with nephritis there is a distinct impairment in the excretion of thiourea.

The Effect of Arsenite on the Respiration of Rat Tissues.

H. W. ELLIOTT AND E. R. NORRIS (*The American Journal of Physiology*, May, 1945) state that rats given 25 milligrammes of arsenic trioxide as a solution of sodium arsenite per kilogram body weight may die in fifteen minutes with the characteristic symptoms. Animals on lower but still lethal doses may develop the same syndrome in the course of a twenty-four hour period. Rats may be adapted to arsenic trioxide by the injection of sublethal doses over a long period of time. While normal rats show a fall in temperature when injected with solutions of sodium arsenite, adapted rats show much less or no drop in body temperature. The hypothermia follows immediately after the injection of arsenic and may be due to a direct effect on the temperature-regulating centre in the hypothalamus, to some action on the vasodilator centres, or to a lowering of the basal metabolic rate which might conceivably be due to reduction of the respiratory rate of the individual body tissues. With the object of determining the cause of the hypothermia, studies were made of the effects of arsenic trioxide on cerebral cortex, diaphragm, kidney, cortex and liver. By tissue respiration studies, action-concentration curves of arsenic trioxide have been prepared for cerebral cortex, diaphragm, kidney cortex and liver in the albino rat. Fatal doses of arsenic trioxide administered subcutaneously *in vivo* have no effect on cerebral cortex respiration, cause reduction of diaphragm and kidney respiration, and induce stimulation of liver respiration. Fatal doses of arsenic trioxide administered intraperitoneally *in vivo* have no effect on cerebral cortex respiration, and cause reduction of diaphragm, kidney cortex and liver respiration. The absence of effect on the cerebral cortex respiration while the respiration of the muscle tissue of the diaphragm is reduced would suggest that the hypothermia of arsenic poisoning is influenced more by a decreased rate of energy metabolism of the individual tissues than by a direct effect on the temperature-regulating centre in the central nervous system.

Tolerance to Arsenic Trioxide in the Albino Rat.

E. R. NORRIS AND H. W. ELLIOTT (*The American Journal of Physiology*, May, 1945) discuss some of the work which has been done concerning tolerance to arsenic. There seems no doubt that the arsenic eater may ingest quantities of arsenic trioxide which would be poisonous to the normal individual. However, the ability of the individual or laboratory animal to acquire a true tolerance to arsenic trioxide either as a solid or in solution as sodium arsenite has been questioned by several investigators. The general belief was that no tolerance could be developed to arsenic in solution, but that with solid arsenic the tolerance is due to diminished absorption. In the course of studies made by the authors on the detoxification of arsenic by rats it was desired to administer the largest doses that could be safely given. Solutions of sodium arsenite were injected intraperitoneally. When a group of rats had been injected with sublethal doses for three weeks it was found that the dose could be increased to a level which invariably killed normal animals without producing toxic effects. Attention was then given to this aspect of the question, and the authors showed that rats acquire a true systemic tolerance to arsenic trioxide in solution, injected intraperitoneally as sodium arsenite. The toxicity of a dosage of arsenic trioxide and the progress of adaptation have been demonstrated by studying the hypothermia after injection. The

ZERO HOUR

BLACK OF NIGHT. A ringing 'phone . . . another call to arms. Instinctively, the doctor answers. For him it is the zero hour. An accident at an industrial plant. A worker seriously injured. Once again begins a battle in the war that never ends . . . the crusade against disease . . . man's untiring enemy.

And science marches by the doctor's side . . . helps fight the foe with modern weapons. Take radiography . . . a good example. Radiographs may save the worker's life . . . help chart a course that leads to successful treatment and a speedier recovery.

* * *

TODAY the satisfactory diagnostic radiograph is the rule rather than the exception. One reason is that radiographers recognize that a sharp, contrasty negative depends to a large extent upon highly efficient intensifying screens. Screen care and replacement are important. Screens that are dirty, scratched or stained produce inferior results.

Examine screens regularly. Replace worn screens. Ample stocks of Patterson Screens are available. Patterson Screen Division of E. I. du Pont de Nemours & Co. (Inc.)

DU PONT

Patterson Screens

Light the paths of X-Ray

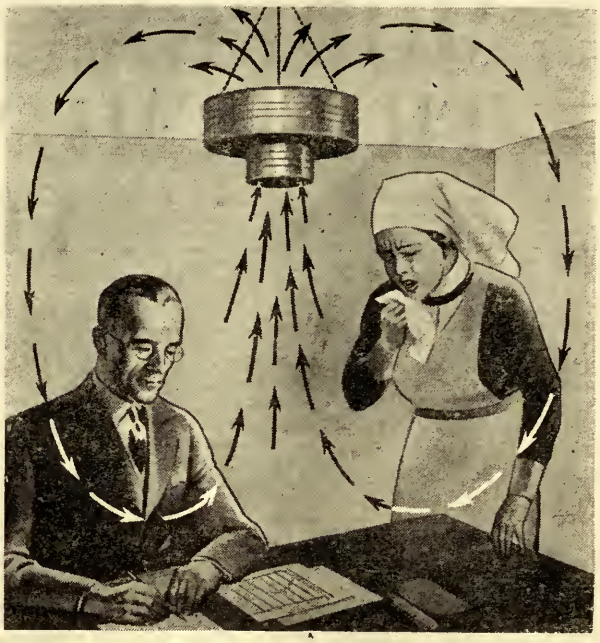
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Distributors for Australia and New Zealand:

WATSON VICTOR LIMITED

Watson House, Bligh Street, Sydney

Melbourne, C.1 .... 117 Collins Street
Brisbane, B.10 .... 105 Eagle Street
Adelaide .... 9 Gresham Street
Wellington, N.Z. .... Kelvin Chambers, 16 The Terrace
Auckland, N.Z. ...... Lister Buildings, Victoria Street
Perth .... 205 St. George's Terrace



Why breathe infected air?

Streptococci, pneumococci, bacilli and viruses are disseminated in the acts of sneezing, coughing and speaking. They cause diseases which range from the common "cold" to dangerous cross-infection and post-operative complications. Vermin-borne and water-borne diseases have been brought under sanitary control. Now it becomes feasible to check the spread of air-borne diseases by continuous elimination of bacteria from the air itself. The Hanovia ultra-violet Air Sanitizer kills air-borne germs effectively, automatically, at low-operating costs, and without any detrimental effects on the air.

Physicians and surgeons, sanitary engineers, hospitals and health officers, are invited to investigate air-sanitation by

The HANOVIA AIR SANITIZER

Information, supply and service throughout Australia from

WATSON VICTOR LIMITED

Branches at:
Sydney .... Bligh St.
Melbourne .. Collins St.
Brisbane ..... Eagle St.
Adelaide ... Gresham St.
Perth ...... St. George's Terrace
Newcastle .. Watt St.

HANOVIA

The ultra-violet Air Sanitizers are another speciality of HANOVIA LTD. Slough, England, the specialists in equipment for actinotherapy.

COUPON.
To Messrs. Watson Victor Ltd.
.... Branch.
Please send me the Hanovia booklet "Air-borne Infection and Air Sanitation".
Name ....
Address...........................
....
V.7/71.

MODERN
TREATMENT
YEAR BOOK, 1945

Edited by Cecil P. G. Wakeley, *C.B.*, D.Sc., F.R.C.S., F.R.S.E.

A year-book of modern diagnostic methods and treatment designed to greet members of the medical services returning from the forces and to enable the busy practitioner to keep abreast of current medical opinion.

"A galaxy of brilliant contributors. . . . The subject matter has been chosen with some care and there is not a single dull page in the volume."
—*Ulster Medical Journal.*

SELECTION FROM CONTENTS

The Nature and Treatment of War-Time Malaria Relapses in England.
Sir Philip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P.

Hydatid Disease Mainly from the Clinical Standpoint.
Sir Louis Barnett, C.M.G., F.R.C.S., F.R.A.C.S.

The Treatment of Injuries to Peripheral Nerves.
H. W. S. Wright, M.S., F.R.C.S.

The Treatment of Early Phthisis in the Young Soldier.
James Watt, M.A., M.D., D.P.H.

The Management of the Young Diabetic in War Time.
G. M. Wauchope, B.Sc., M.D., M.R.C.P.

The Treatment of Peptic Ulcer in War Time.
A. Morton Gill, M.D., M.R.C.P.

THE MEDICAL PRESS AND CIRCULAR
8 Henrietta Street, London, W.C.2

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.
B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

COUNTRY PRACTICE. Cash takings £1,850. For sale, £1,400. House £1,100.

TASMANIAN CITY PRACTICE for sale, £3,000. House for sale or rental.

MEDICAL PRACTITIONER required for country practice. Guaranteed £800 per annum. House for sale or rental.

SUBURBAN AND COUNTRY assistants required.

PARTICULARS IN CONFIDENCE

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.
B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance available in approved cases to facilitate transfers.

Telephones { **B 4159**
XA 2644 (After Hours)

Telegrams: "Locumtens Sydney".

C. R. STRANGE,
Manager and Secretary.

tolerance to injected arsenic trioxide was shown not to be due to decreased rate of absorption from the body cavity.

BIOCHEMISTRY.

Alloxan.

S. Banerjee (*The Journal of Biological Chemistry*, May, 1945) has reported on the hypoglycæmic action of alloxan. Hypoglycæmic convulsions were not observed when alloxan (200 milligrammes per kilogram) was injected intravenously into three partially pancreatectomized rabbits. All three animals survived and developed hyperglycæmia and glycosuria on the following day. Three normal rabbits with the pancreas intact died of hypoglycæmic convulsions within varying periods after the intravenous injection of alloxan. The alloxan hypoglycæmia is suggested to be due to the release of preformed insulin from the necrosed islets and not to stimulation of the islet tissue.

Vitamin E.

D. W. Woolley (*The Journal of Biological Chemistry*, June, 1945) has studied some biological effects produced by the quinone of α-tocopherol. Administration of *dl*-α-tocopherol quinone to pregnant mice causes hæmorrhage in the reproductive system and resorptive termination of pregnancy during the last week of gestation. Similar amounts of the compound were without detectable effect on non-pregnant mice. No permanent damage was done to the ability to reproduce. The action of the quinone was not prevented by large doses of α-tocopherol acetate, but was negated by small amounts of 2-methyl-1, 4-naphthoquinone (vitamin *K*). The quinone was viewed as a structural analogue of both vitamin *E* and vitamin *K*. 3, 3′-methylenebis (4-hydroxycoumarin), which caused signs (reversible by vitamin *K*) similar to those seen in vitamin *K* deficiency, did not produce resorption or vaginal hæmorrhage in pregnant mice. The quinone was much more effective when given intraperitoneally than when given orally.

Lipides.

W. A. Gortner (*The Journal of Biological Chemistry*, June, 1945) has investigated the lipide fractions of 438 fœtuses, representing 66 litters and covering 70% of the gestation period of the pig. The water content of the pig fœtus exhibits two rapid falls during growth, a phenomenon previously correlated with changes in the fœtal kidneys. The total lipide and lipide to protein ratio remain constant for a large part of the embryonic growth period. Evidence is presented that a considerable portion of the non-phospholipide fatty acids, often considered "neutral fat", is actually present in unesterified (free) form. On a dry weight basis, the phospholipide content is at a maximum in the very young fœtus, which has twice as much of this lipide as does the fœtus at term. The phospholipide fatty acids, in common with the other acid fractions, have an average iodine number of 82. The unsaponifiable lipides in the dry solids progressively decrease in their percentage content during embryonic growth, the total and free cholesterol fractions roughly paralleling this fall. At no time is there any notable tendency for cholesterol to appear in ester form. The fœtal glycerides gradually increase, beginning about the middle of the gestation period, but even at term they account for only a minor part of the total lipide substance. Considerable differences exist in the development of the lipides in the fœtal pig in comparison with the fœtal rabbit.

Galactose.

D. Stetten (*The Journal of Biological Chemistry*, June, 1945) has studied the glycogen turnover in the liver and carcass of rats fed with galactose. When rats were fed with galactose instead of glucose as the sole dietary sugar, less glycogen was recovered from their tissues, especially from their livers. The rate at which deuterium was incorporated into this glycogen from deuterium oxide in the body fluid was at least as rapid as when glucose was fed. From the maximal isotope concentrations in the glycogen it could be shown that the animal can convert galactose into glycogen without labilization of all of the carbon-bound hydrogen. The galactose excreted in the urine when galactose is fed to male rats receiving deuterium oxide is essentially free of deuterium. This finding provides a confirmation of the non-exchangeable nature of the carbon-bound hydrogen of hexose.

Choline.

R. W. Luecke and P. B. Pearson (*The Journal of Biological Chemistry*, May, 1945) have studied the effect of the ingestion of excessive quantities of choline on the amount in tissues and urine. The ingestion of forty grammes of choline chloride daily for a period of six days did not increase either the free or total choline content of the liver, kidney or plasma. The choline recovered in the urine on any single day during choline feeding ranged from 0·7% to 2·5% of the choline ingested by sheep. The amount excreted in the urine of dogs ingesting five grammes daily was approximately 0·5% of the amount ingested. The ingestion of choline is accompanied by an increase in urinary nitrogen. The increment in urinary nitrogen is virtually equivalent to the choline nitrogen ingested. Betaine hydrochloride administered *per os* is not excreted in urine as choline or betaine.

Wound Healing.

H. E. Paul *et alii* (*Archives of Biochemistry*, June, 1945) have found that the thiamin content of repair tissue in skin wounds at the stage of rapid healing is approximately double that of normal skin. The average thiamin content of normal rat skin has been determined to be 0·57 microgramme per gramme in animals in the latter half of life.

Biotin.

C. Kennedy and L. Palmer (*Archives of Biochemistry*, June, 1945) have produced evidence that biotin is one of the factors needed for successful gestation and the birth of viable young in the rat and is probably a necessary factor in lactation; however, as folic acid was not included in the ration, the effect of biotin on lactation is not positively known.

Body Composition.

H. H. Mitchell *et alii* (*The Journal of Biological Chemistry*, May, 1945) have studied the chemical composition of the adult human body, thirty-five years of age, with reference to moisture, ether extract, protein (N × 6·25), total ash, calcium, phosphorus and gross energy. Individual analyses of the skeleton, musculature, skin and many visceral organs are reported. The data from this material have been considered in connexion with the requirements of calcium for growth on the assumption that the integration of calcium accretions during the growing period will equal the calcium content of the adult organism.

Vitamins in Muscle.

E. E. Rice *et alii* (*Archives of Biochemistry*, June, 1945) have investigated the distribution and comparative content of certain *B*-complex vitamins in pork muscular tissues. The thiamin, riboflavin, niacin and pantothenic acid contents of 24 pork muscles have been determined for each of several animals. It has been shown that the vitamin content of the muscles in a single animal vary as much as 200% to 300%. Muscles which are high in a vitamin in one pig tend to be high in other animals of this species. Muscles containing relatively much thiamin usually contain high levels of niacin, but relatively low levels of riboflavin and pantothenic acid. Although there are indications that the activity or function of the muscle may be responsible for the variations in vitamin content, no definite conclusions to this effect can be drawn on the basis of the present data.

Acetic Acid.

The formation of acetic acid in the rat has been studied quantitatively by K. Bloch and D. Rittenberg (*The Journal of Biological Chemistry*, June, 1945). The acetylation of foreign amines by acetic acid was studied. By employing acetate labelled with C^{13} as well as deuterium, it has been shown that no loss of deuterium due to exchange reactions occurs in the acetylation of reaction. Acetic acid is an effective acetylating agent for para-aminobenzoic acid, *d*- and *l*-phenyl-amino-butyric acids and sulphanilamide. Evidence is presented to show that acetic acid is the only acetlyating agent for the aromatic amines, sulphanilamide and para-aminobenzoic acid. Acetic acid is the major source of acetyl groups in the acetylation of phenylamino-butyric acid, which, however, can also be acetylated by a mechanism probably involving pyruvic acid. From the dilution of the acetate fed it is calculated that 15 to 20 millimolls of acetic acid are formed daily per 100 grammes of rat tissue. It is suggested that the major part of this acetate arises from the oxidation of fatty acids. It is estimated that at least half the carbon atoms of cholesterol are derived from acetate.

British Medical Association News.

ANNUAL MEETING.

THE annual meeting of the Queensland Branch of the British Medical Association was held at B.M.A. House, Wickham Terrace, Brisbane, on December 14, 1945, DR. H. W. HORN, the President, in the chair.

ANNUAL REPORT OF COUNCIL.

The annual report of the Council, which had previously been circulated among members, was taken as read on the motion of Dr. C. C. Minty, seconded by Dr. D. Gifford Croll, and adopted on the motion of Dr. C. C. Minty, seconded by Dr. Alex Murphy. The annual report is as follows.

The Council has pleasure in presenting the following report of the work of the Branch for the year ending November 15, 1945.

Membership.

The membership of the Branch is 641 and 3 complimentary members, as against 623 last year, making a gain of 18. Forty-five honorary associate members were elected during the year.

The gains were: new members, 43; transferred from other Branches, 2; members reinstated, 1.

The losses were: members transferred to other Branches, 13; deceased, 12; resignations, 3.

The following members of the Branch completed fifty years of membership of the British Medical Association at the end of the year 1944: Dr. W. Wallis Hoare, Dr. J. A. Goldsmid.

There is a total of 146 members engaged on full-time duty with His Majesty's Forces.

Honours have been conferred by His Majesty the King on the following members for services rendered during the war: O.B.E., Lieutenant-Colonel Arnold W. Robertson; Military Cross, Captain H. Glynn Connolly. Mentioned in Dispatches: Lieutenant-Colonel P. W. Hopkins, Lieutenant-Colonel W. E. E. Langford, Lieutenant-Colonel L. McD. Outridge, Lieutenant-Colonel J. H. Thorpe, Lieutenant-Colonel L. G. Hill, Lieutenant-Colonel R. G. Quinn. A letter of congratulation was sent to these members.

We are glad to extend a warm welcome to the following members who have been prisoners of war: Major B. L. W. Clarke, Major Clive Uhr, Captain C. R. R. Huxtable, M.C., Captain C. R. Boyce, prisoners of war in Japanese hands, and Captain L. Pelham Sapsford, who was a prisoner of war in Germany.

Obituary.

The Branch has sustained a loss by death of the following members: Dr. Clive L. Paine, Dr. A. C. F. Halford, Dr. R. Graham Brown, Dr. R. A. McWilliam Robinson, Dr. W. A. Fraser, Dr. Alan R. East, Dr. J. E. Overstead, Dr. St. A. W. L. McDowall, Dr. F. W. Harlin, Dr. Eric Meikle.

It is with regret that we record the death of Sir David Hardie, M.D., which has just occurred. Sir David Hardie had been a member of the Association for over fifty years and he was a past president of the Branch.

Roll of Honour.

Captain Benjamin Hooper died on active service. Captain D. G. Picone and Captain P. M. Davidson died whilst prisoners of war in Japanese hands.

Meetings.

In addition to the annual meeting, twelve meetings of the Branch were held, two of which were special meetings, one being held to give members an opportunity of hearing the views of the Federal Council on the *Pharmaceutical Benefits Act*, given by the General Secretary, Dr. J. G. Hunter, and the other an address by Dr. C. I. McLaren.

The average attendance was forty-one.

Council.

Twenty-one meetings were held. The record of attendances of the Council is as follows:

Dr. H. W. Horn (President)	21
Dr. J. G. Wagner (President-Elect and Honorary Treasurer)	20
Dr. L. P. Winterbotham (Past President)	14
Dr. Norman Sherwood (Honorary Secretary)	20
Dr. C. C. Minty (Chairman of Committees)	20
Dr. J. G. Avery (Honorary Secretary of Committees)	16
Dr. Felix Arden (Councillor)	16
Dr. E. W. Casey (Councillor)	18
Dr. R. B. Charlton (Councillor)	13
Dr. D. Gifford Croll (Councillor)	20
Dr. Milton Geaney (Councillor)	18
Dr. L. T. Jobbins (Councillor)	13
Dr. Alan E. Lee (Councillor and Federal Council representative)	20
Dr. F. W. R. Lukin (Councillor)	14
Dr. J. G. Morris (Councillor)	16
Dr. Mervyn S. Patterson (Councillor)	15
[1]Dr. T. A. Price (Councillor and Federal Council representative)	8
Dr. W. H. Steel (Councillor)	16

Scientific.

February.—Clinical meeting in conjunction with the Mater Misericordiæ Public Hospital Clinical Society.

March.—Dr. L. J. J. Nye: "The Management of Duodenal Ulcer."

April.—Dr. P. A. Earnshaw: "The Problem of the Underweight Child."

May.—Discussion of the profession's attitude to the *Pharmaceutical Benefits Act.*

June.—Brigadier N. Hamilton Fairley: "Tropical Medical Research in the Australian Army" (Joseph Bancroft Memorial Lecture).

July.—Dr. Neville G. Sutton: "A Surgeon Visits the U.S.A."

July (Special).—A talk by Dr. J. G. Hunter, General Secretary of the Federal Council, on the *Pharmaceutical Benefits Act.*

August.—Symposium on backache. The opening speakers were Dr. A. V. Meehan, Dr. Ellis Murphy and Dr. Alan E. Lee.

August (Special).—Dr. C. I. McLaren: "A Medical Psychologist in the Far East."

September.—Dr. S. Julius: "The History of Medicine in Soviet Russia" (Jackson Lecture).

October.—Major John F. Williams: "The Working of a Child Guidance Clinic."

November.—Clinical meeting in conjunction with the Brisbane General Hospital Clinical Society.

Office-Bearers and Councillors.

Dr. J. G. Wagner was elected President-Elect for the ensuing year and Dr. Norman Sherwood was elected Honorary Secretary.

The following office-bearers were elected by the Council:

Honorary Treasurer: Dr. J. G. Wagner.
Chairman of Committees: Dr. C. C. Minty.
Honorary Secretary of Committees: Dr. J. G. Avery.
Honorary Librarian: Dr. Neville G. Sutton.
Assistant Honorary Librarian: Dr. Konrad Hirschfeld.

Dr. Mervyn Patterson, Dr. J. G. Avery, Dr. Robin Charlton and Dr. L. T. Jobbins are not seeking reelection for 1946, and the Council wishes to record its appreciation of the services rendered by them.

Ethics Committee.

At the annual meeting of the Branch held on December 13, 1944, the following were elected members of the Ethics Committee: Dr. Alex. Marks, C.B.E., D.S.O., V.D., Dr. G. P. Dixon, C.B.E., V.D., Surgeon Commander Gavin Cameron, Dr. M. Graham Sutton, Dr. L. J. J. Nye. The *ex-officio* members of the Ethics Committee consist of the President, President-Elect, the Honorary Treasurer and the Honorary Secretary for the time being in office.

Two meetings of the committee were held to deal with a complaint received regarding a member of the Branch.

Library.

During the year seventy-eight books were borrowed from the library by thirty-three members.

Arrangements have been made to receive the reports of the Medical Research Council of England as they are published.

The only addition to the library this year is "Pre-School Centres of Australia", by J. H. L. Cumpston and Christine Heinig.

---

[1] Leave of absence.

Representation.

The Branch was represented as follows during the year:

Council of the British Medical Association: Professor R. J. A. Berry.

Federal Council of the British Medical Association in Australia: Dr. T. A. Price and Dr. Alan E. Lee.

Federal Council Contract Practice Committee: Dr. L. P. Winterbotham.

Australasian Medical Publishing Company, Limited: Dr. D. Gifford Croll, director; Dr. T. A. Price and Dr. Alan E. Lee, members.

Medical Officers' Relief Fund (Federal): Queensland Committee, Dr. D. Gifford Croll, Dr. G. P. Dixon, Dr. W. H. Steel.

Medical Assessment Tribunal: Dr. A. H. Marks.

Queensland Medical Board: Dr. D. Gifford Croll, Dr. J. G. Wagner, Dr. Felix Arden.

Queensland Post-Graduate Medical Education Committee: Dr. S. F. McDonald and Dr. Alan E. Lee.

Queensland Medical Coordination Committee: Dr. F. W. R. Lukin.

Queensland Radium Institute: Dr. Alan E. Lee.

Queensland Nutrition Council: Dr. P. A. Earnshaw, Dr. Noel M. Gutteridge.

Queensland Bush Nursing Association: Dr. L. Bedford Elwell.

Queensland Council of Social Agencies, Board of Studies: Dr. C. C. Minty.

Flying Doctor Service of Australia: Dr. Harold Crawford.

Red Cross Blood Transfusion Service Committee: Dr. Milton Geaney.

Red Cross Society Appeal Committee: Dr. L. J. J. Nye.

The Surf Life Saving Association of Australia, Queensland State Centre: Dr. F. W. R. Lukin.

Physical Fitness Association of Queensland: Dr. E. S. Meyers and Dr. Harold Crawford.

The Editor of THE MEDICAL JOURNAL OF AUSTRALIA was represented by Dr. Felix Arden.

War Emergency Organization.

Rehabilitation of Members of the Armed Services.

The special subcommittee of the Branch appointed to deal with this important matter consists of the following members: Dr. J. G. Wagner, Dr. F. W. R. Lukin, Dr. C. C. Minty, Dr. Ellis Murphy, Dr. T. V. Stubbs Brown, and the *ex-officio* members of the Council.

The Council has been watchful of the interests of members returning from the services in regard to the provision of facilities for post-graduate study and hospital experience, and also in placement in civilian practice. Such members have been urged to seek the advice of the Rehabilitation Subcommittee, and everything possible will be done to assist them in all their problems.

Dr. Ellis Murphy has been appointed to act as the representative of the Queensland Post-Graduate Medical Education Committee on the Rehabilitation Subcommittee of the Branch, and Dr. Stubbs Brown is the nominee of the Society of Returned Medical Officers of Queensland.

In June last the President attended a meeting of representatives of the Universities Commission with the local Advisory Committee to that commission, at which details regarding rehabilitation of medical officers were discussed, and the general principles of medical education to be permitted and paid for by the Universities Commission were defined.

The question of facilities for post-graduate work outside Australia being made available to medical officers discharged from the armed forces, on terms to be arranged, had been under discussion by the Federal Council of the British Medical Association. The Branch Council has expressed itself in favour of the suggestion.

The Branch Council has also endorsed a recommendation made to the Federal Council that there should be open competition between the medical agencies regarding ex-service practitioners who are seeking avenues of practice.

Queensland Medical Coordination Committee.

Dr. F. W. R. Lukin was again reappointed representative of the Branch on the Queensland Medical Coordination Committee for the year 1945.

The Branch Council has endorsed the opinion of the Federal Council that the present set-up of State Medical Coordination Committees under Commonwealth control should continue for the time being.

Repatriation Commission: Medical Benefits for Dependants of Deceased Soldiers.

An agreement between the Repatriation Commission and the Federal Council has now been reached, after having been under discussion for several years. The terms of the agreement should be satisfactory to the medical profession.

Payment for service to dependants of deceased soldiers will be on a sliding scale determined by the nominal wage index each year, with a differentiation for metropolitan and extra-metropolitan areas. For the purposes of the agreement the metropolitan area has been extended to include Toowoomba, Maryborough, Rockhampton and Ipswich.

It is understood that beneficiaries may receive treatment directly by agreement with the Repatriation Department without the intermediary of a lodge. Also that benefits must be taken up within six months without submitting to medical examination. After the expiration of that time a medical examination is necessary.

Queensland Medical War Benefit Fund.

The Queensland Medical War Benefit Fund was renewed for a further period of twelve months, which expires on April 30, 1946.

The future of the fund is undecided at present.

Federal Medical War Relief Fund.

It is proposed by the Federal Council to establish a Federal Medical War Relief Fund to assist members of the medical profession who have been disabled, and the dependants of those who have died as a result of enemy action or of sickness contracted whilst serving in the armed forces. Also to issue loans, with or without interest, to medical men, who, as a result of enemy action, may require temporary financial assistance.

The fund is to be established by donations from members of the profession in Australia, and an effort is to be made in each State to secure as large initial donations as possible.

The control of the fund will be in the hands of trustees appointed by the Federal Council, and a local committee of management has been appointed in each State.

It was decided by the Branch Council to appoint the same personnel as the trustees of the Queensland Medical War Benefit Fund as the local committee of management for the Federal Medical War Relief Fund in this State, namely, Dr. J. G. Wagner, Dr. F. W. R. Lukin, Dr. J. G. Avery, Dr. Milton Geaney and Dr. J. V. Duhig.

An appeal is to be launched shortly for donations to the fund.

Rationing.

Although the war has ended, the supply of certain foods necessary for special classes of the community is still a matter for medical certification, but the position has eased somewhat in this regard.

Liquid Fuel Supplies.

The subcommittee appointed to deal with petrol requirements of metropolitan members has continued its useful work with the able assistance of Mr. F. K. Davis. Dr. L. P. Winterbotham is chairman, and the other members are Dr. Alec Paterson, Dr. A. G. Anderson and Dr. J. G. Avery.

Motor-Car Tires and Accessories.

Members have also been assisted by Mr. F. K. Davis in obtaining necessary new tires and retreads *et cetera,* in order to maintain efficient transport to enable them to carry out their professional duties.

Linen for Doctors' Surgeries.

Through a subcommittee consisting of Dr. L. P. Winterbotham, Dr. J. G. Avery and Dr. Alec Paterson, members are enabled to obtain adequate supplies and replenishments of linen for their surgeries; returned service medical officers particularly appreciate the assistance given in this matter.

Monthly Newsletter.

The monthly newsletter, which was originally sent only to members in the forces to keep them in touch with current events, is now circulated to all members of the Branch, although it does not necessarily represent the views of the Council.

The members of the Publicity Committee responsible for the compilation of the newsletters are to be congratulated upon their excellent work and variety of expression.

Supply of Artificial Limbs.

Attention was drawn to the serious position existing in Queensland in connexion with the supply of artificial limbs. It is almost impossible for a patient with an amputation to obtain an artificial limb. The matter was referred to the Chairman of the Medical Equipment Control Committee, who promised that all possible steps would be taken to remedy the position.

Licencees under Alien Doctors (National Security) Regulations.

At the meeting of the Federal Council held in Melbourne on October 15, 1945, it was decided to recommend to the Branches that, unless their country of origin provides registration of graduates of the State concerned upon conditions no less onerous than those existing in such State, the registration of alien doctors whose licences will have expired be opposed.

Organization Subcommittee.

Personnel: Dr. Alan E. Lee, Dr. W. H. Steel, Dr. Robin Charlton, Dr. Felix Arden, Dr. E. W. Casey, Dr. J. G. Morris, Dr. L. T. Jobbins and the *ex-officio* members of the Council.

This subcommittee is vested with power to act in matters which came before it, provided they are not questions of policy or of a controversial nature.

During the year 24 meetings were held, and recommendations were made to the Council on matters which were not dealt with directly by the subcommittee.

The following is a record of some of the important subjects considered by the subcommittee.

Workers' Compensation Schedule of Fees.—A schedule of medical fees for attendance on injured workers, as agreed between the Council of the Branch and the Insurance Commissioner, and endorsed by the State Treasurer, has been published and circulated to the profession. This schedule came into operation as from April 1, 1945, and appears to be working satisfactorily.

The fees are applicable to treatment of injured workers in their home, at the doctor's surgery or in a private hospital. In ordinary cases of injury to workers the Insurance Commissioner is responsible for payment of medical fees not exceeding £25, but no responsibility is accepted by him for private hospital fees, except in special circumstances where no public hospital accommodation is available, or for injured workers who are covered by a lodge agreement, or other contributory scheme. The sympathetic cooperation of the Insurance Commissioner in all matters under dispute must be fully acknowledged.

Unemployment and Sickness Benefits Act.—Regarding the question of medical certificates required under the provision of this act, members have been advised, where information of a confidential nature has to be disclosed, to give the certificate to the patient concerned or obtain the written consent of the patient to furnish the information to the Social Service Department.

Medical Certificates.—It is a matter of congratulation to the profession that during the year there has been very little need for the functioning of the subcommittee appointed to deal with such matters.

The members of the subcommittee are Dr. H. W. Horn and Dr. L. P. Winterbotham.

General Health Policy of the Branch.—In view of the importance of the health of the community which is receiving the attention of the Government and other bodies, a special subcommittee was appointed to draw up a general health policy for the Branch, which was adopted by the Council in August. Copies have been sent to the Federal Council, other State Branches, and to local medical associations of the Queensland Branch.

Queensland Institute of Medical Research.—A letter was sent to the Minister for Health and Home Affairs congratulating him upon the establishment of an Institute of Medical Research, as outlined in the Press, and assuring him of the full cooperation of the Association.

Queensland Health Education Council.—The Queensland Health Education Council, which was instituted by an Order in Council of the Governor during the year, has superseded the Queensland Cancer Trust, and its activities have been extended to "educate the public in health matters generally".

The medical members appointed by the Government include Dr. Alan E. Lee, Dr. L. M. McKillop, Dr. Konrad Hirschfeld, Dr. E. H. Derrick and Dr. A. B. Fryberg.

A conference of interested bodies was held on August 7 to discuss the best avenues for the expenditure of public money on health education of the general public, at which the Branch was represented by Dr. Harold Crawford. Subsequently recommendations drawn up by a subcommittee were submitted to the Health Education Council, and a copy of the general health policy of the Branch was forwarded.

Operations Performed on a Minor.—In response to an inquiry for a statement as to the legal responsibility of the profession in connexion with an operation performed on a minor, a reply was received from the Minister for Health and Home Affairs. It was stated that the Solicitor-General advises that parents under Queensland law have full control of infants within the meaning of our *Children's Protection Act*, 1896, and an operation on such an infant would be an assault. On the other hand, if the parent's refusal of consent were perverse, such parent might be guilty of an offence under the act, or even of manslaughter.

Lead Poisoning.—No improvement in the position with regard to lead in paint has been achieved. It is contended by the Master Painters' Association that, while the Federal Government permits paint to be manufactured with lead as a pigment, the painters have no alternative but to use it. Dr. L. J. J. Nye addressed the Master Painters' Association on the incidence of lead poisoning in Queensland. Subsequently at a joint conference between representatives of the Master Painters, Signwriters and Decorators' Association of Queensland and representatives of the Operative Painters' Union, it was decided to ask the British Medical Association to join them in a deputation to the Minister for Health in an endeavour to clarify the position with regard to the quantity of lead being used in the manufacture of paint. A reply was sent stating that we are only too pleased to cooperate, and Dr. D. Gifford Croll and Dr. L. J. J. Nye will represent the Branch at the deputation to the Minister.

Acute Anterior Poliomyelitis.—At the suggestion of the Minister for Health, a conference was held on March 9 to make recommendations for the prevention of the spread of this disease, at which the Association was represented by the President, Dr. H. W. Horn. The recommendations were as follows: That consultants should be made available and that patients be isolated for fourteen days. If a case occurs in a school child, all children in the class are to be isolated at home. Contacts under fourteen years of age are to be isolated at home for fourteen days. Power to control children at theatres, picture shows *et cetera* to be obtained. The treatment will depend upon the medical practitioner in charge of the case, and the wish of the parents.

Peters-Arctic Delicacy Company, Limited, Staff Superannuation Scheme.—A letter was received from the trustees of the scheme, stating that they are desirous of instituting a free medical examination for each member of the superannuation scheme, in addition to the welfare benefits already provided, and requesting advice on the matter. A conference of representatives of both bodies was held, and subsequently a medical officer was appointed to whom a fee of one guinea is to be paid for each individual examination, and the scheme will also meet the cost of any further examination by a specialist where necessary. All members of the scheme are invited to submit to free medical overhaul.

Liquor Reform Society.—At a conference of organizations interested in liquor reform which was held in July, a session was organized by the Council to present the scientific angle to the public. Dr. L. P. Winterbotham acted as chairman of the session and the speakers were Professor John Bostock and Dr. F. W. R. Lukin.

Health Inspectors' Association: Annual Conference.—The President, Dr. H. W. Horn, accepted an invitation to attend the annual conference of the Health Inspectors' Association, and delivered an address at the opening meeting on Tuesday, August 21. These annual conferences have been in abeyance for some years owing to the war.

Assistants in Doctors' Surgeries.—The question of salaries paid to trained nurses in doctors' surgeries was raised by the Australasian Trained Nurses' Association at the request of their members concerned, with a view to having the amount increased to £5 9s. per week as provided in the award for registered nurses employed in industrial and commercial establishments.

A reply was sent to the effect that the Council is in favour of adequate salaries being paid, but it is not in a position to bind doctors in their individual contracts with trained nurses.

An application is to be made to the Industrial Arbitration Court by the Federated Clerks' Union to have receptionists in doctors' surgeries brought under the conditions of the clerks' award. The claim will be opposed by the Association.

Historical Records.—With the object of collecting and preserving medical records of the early part of this century in Queensland, a subcommittee has been appointed comprising Dr. E. S. Meyers, Dr. Harold Love and Professor John Bostock.

Queensland Surf Life Saving Association.—It has come to the notice of the Council that a member was acting as honorary medical officer to a surf life saving club, and it was pointed out to him that the holding of such an appointment was an infringement of By-law 51, namely: "No member of the Association shall act as Honorary Medical Officer of any athletic, sporting, racing or similar body." The member subsequently resigned from the position.

Dr. F. W. R. Lukin holds appointment as honorary medical officer to the Queensland State Centre of the Surf Life Saving Association and liaison officer between the Queensland Branch of the British Medical Association and that organization, to which position he was nominated by the Council. This does not involve giving free treatment to members of the Surf Life Saving Association.

Hospital Matters.

The Hospital Subcommittee did not function this year, and matters concerning hospitals have been dealt with by the Organization Subcommittee.

Hospitals Act Amended.—The *Hospital Act Amendment Act* came into force during the year, and all efforts to have medical representation on hospital boards have been unsuccessful. The Part-Time Medical Officers' Association of the Brisbane and South Coast Hospitals Board has also approached the Minister for Health and Home Affairs regarding the matter.

The Brisbane and South Coast Hospitals Board, as reconstituted, consists of eight members appointed by the Government and one by the seventeen local authorities in the board's area. The majority of the appointees are government departmental officers and union officials.

Hospital Policy of the Branch.—During the year the hospital policy of the Branch was revised to meet altered conditions. The planning of hospitals in the past was largely influenced by the fact that public hospitals were regarded as places for treatment of the sick poor, but this function has almost disappeared in Queensland, and public hospitals are used to a great extent by the whole community. Only about 20% of hospital patients in Queensland use private hospitals. It is considered, therefore, that hospitals should be divided into three classes, (i) community hospitals, (ii) base hospitals, (iii) special hospitals, and the first requirement for an improved hospital system in Queensland is decentralization. The amended hospital policy of the Branch is based on these lines, and copies have been sent to interested bodies and to members who had submitted comments on the draft policy which was circularized to all members of the Branch.

Lack of Hospital Accommodation.—A conference of interested parties was arranged by the Council of the British Medical Association to consider what steps could be taken to improve the position of shortage of hospital accommodation. Further private hospitals have had to close down owing to lack of nursing and domestic staff. The only solution appears to be to make more beds available and provision of adequate staff.

Annual Leave for Hospital Medical Officers.—This matter has been taken up with the Department of Health and Home Affairs, in view of the fact that some hospital boards include a clause in their by-laws making it necessary for the medical officer of the hospital to provide a *locum tenens* at his own expense for four weeks' annual holiday. It is considered that the cost of a *locum tenens* for the period of four weeks should be borne by the hospital board.

Hospital Benefits Act, 1945.—The Federal Council met the Acting Minister for Health, Senator Keane, and other departmental officials on October 16 to discuss the *Hospitals Benefits Act*, 1945, when the policy of the Federal Council was placed before them.

The question of the retention of honorary medical service to public hospitals in the event of the abolition of the means test is under consideration by the Branches.

Lodges

The Joint Committee of representatives of the Friendly Societies Medical and Hospital Council and lodge medical officers met on three occasions. The representatives of the Branch are: Dr. L. P. Winterbotham, Dr. H. W. Horn, Dr. T. A. Price, Dr. F. W. R. Lukin.

Capitation Fee: Metropolitan Area.—Approval was granted by the Prices Commissioner for payment of increased capitation fees to medical officers in accordance with the sliding scale laid down in the agreement between the Friendly Societies Medical and Hospital Council and the British Medical Association. The capitation fee for the year commencing July 1, 1945, was computed by the Government Statistician as 33s. 6d. for adult male members.

Capitation Fee: Country Areas.—The Council has expressed the opinion that the rate for country areas should be a 25% increase on the metropolitan rate.

The Bundaberg Local Association suggested that the lodge rates should be compulsorily fixed by the Branch Council, and not left to local associations or lodge medical officers, as at present provided in the by-laws, which it is considered should be amended. This suggestion has been referred to the local associations for their comment.

Federal Common Form of Agreement.—At the last meeting of the Federal Council it was decided that the time has arrived for the implementation of the agreement, and a communication is being forwarded to the Federal Council of the Friendly Societies Association asking whether the friendly societies throughout Australia are prepared to accept the Common Form subject to agreement being reached in regard to rates which will be on a sliding scale.

Building Subcommittee.

Personnel: Dr. D. Gifford Croll, Dr. M. Graham Sutton, Dr. S. F. McDonald, and the *ex-officio* members of the Council. The activities of the subcommittee have been resuscitated with the object of considering the question of the erection of a new building on the Wickham Terrace site.

Medical Fees Tribunal.

Personnel: Dr. G. P. Dixon (Chairman), Dr. Alan Lee (Honorary Secretary), Dr. J. G. Wagner, Dr. D. Gifford Croll, Dr. H. S. McLelland, Dr. S. F. McDonald.

Four cases were dealt with during the year, in two of which the verdict given was: "That the fee charged was fair and just." In the third case, in which a fee of £6 6s. had been charged, the finding was: "That the fee charged was higher than was warranted and that the just fee for such service was £4 4s." In the fourth case a fee of £80 was charged for an operation, including assistant and anæsthetic fees and drugs. The finding of the tribunal was: "That the fee was considerably higher than was warranted and that a just fee for such service was £38 17s.

British Medical Association (Queensland Branch) Memorial Fund.

The indenture has been drawn by our solicitors, and the President, Honorary Treasurer and Honorary Secretary, for the time being in office, have been appointed trustees.

The purposes of the fund are as follows:

1. To provide prizes commemorating distinguished members of the Queensland Branch of the British Medical Association for meritorious students in the University of Queensland in the Faculty of Medicine.

2. To provide volumes commemorating distinguished members of the Queensland Branch of the British Medical Association to the library of the said Branch endorsed with such commemoration on the fly leaf of such volume signed by the President for the time being of the Branch.

3. To provide a British Medical Association Memorial Roll to be kept in conjunction with such Memorial Fund. The name of a deceased member shall be entered in such Memorial Roll on the instructions of the Council of the said Branch, so that such Memorial Roll may be read by the President for the time being of such Branch at every annual meeting of the Branch.

4. To provide for any other kind of memorial to distinguished members of the said Branch that the trustees may determine at the request of the Council of the said Branch.

5. The name of a deceased member of the said Branch shall not be inscribed on the Memorial Roll unless: (*a*) Not less than three friends of the deceased member make application to the trustees that his name be inscribed. (*b*) The Council of the said Branch certify the deceased member to have been a distinguished and honourable member of the Queensland Branch of the British Medical Association and of the medical profession. (c) The sum of not less than twenty-five pounds to be paid into the Memorial Fund by the friends of such deceased member at the time of such application.

With the concurrence of its trustees, the Eustace Russell Memorial Fund has been added to the Memorial Fund of the Branch.

The following is a list of the foundation members to be entered on the Memorial Roll: Joseph Bancroft, Kearsey Cannan, Ernest Sandford Jackson, John Mowbray Thomson, Charles Ferdinand Marks, William Nathaniel Robertson, Donald Allan Cameron, Francis Washington Everard Hare, William Frederick Taylor, Peter Bancroft, Joseph Espie Dods, James O'Neil Mayne, James Barr McLean, Hugh Bell, Eustace Russell.

The Council has also approved of the following names being entered on the Memorial Roll: John Lockhart Gibson, Kenneth Joseph Gilmore Wilson.

Affiliated Local Associations.

Rockhampton Local Medical Association.

The membership of the Association is as follows: President, Dr. F. C. Wooster; Honorary Secretary, Dr. R. Palmerston Rundle;; other members are Dr. E. R. Watkins, Dr. Paul E. Voss, Dr. D. B. Walker, Dr. C. N. Matheson, Dr. Adah Stuart, Dr. W. E. Hasker, Dr. Doris Skyring, Dr. Vincent T. J. Lynch, Dr. Bruce Gordon, Dr. N. C. Talbot, Dr. J. C. Ross, Dr. B. R. V. Forbes.

Two meetings were held during the year. The first, which was preceded by a dinner and followed by supper, consisted of medical films and an address by the President of the Queensland Branch, Dr. H. W. Horn. The second meeting included an address by Dr. A. G. S. Cooper on "Indications for Radium and X-Ray Therapy".

R. PALMERSTON RUNDLE,
Honorary Secretary.

Bundaberg Local Medical Association.

The membership of the Association is as follows: Dr. E. Schmidt (President), Dr. I. C. Hains (Honorary Secretary-Treasurer), Dr. Duncan Fowles, Dr. L. McKeon, Dr. A. W. Graham.

We have to report for the year just past that the Association of members is developing along the direction of strengthening the ties between the members. Regular meetings are held and discussion is free, and careful records are kept of all proceedings, and there is general unanimity on decisions made.

During this term we have had the pleasure of addresses by Dr. A. G. S. Cooper, of the Queensland Radium Institute, Brisbane, who addressed us on radium and radiotherapeutics. We greatly appreciated the detailed information given on this important subject, also by Professor J. V. Duhig, of the Queensland University, who more recently, at short notice, addressed us on various matters of pathological and biochemical interest. These lectures we feel are very important inasmuch as the spoken word is a vast help in augmenting what is learnt by experience, as also the written word. We trust, therefore, that in the days to come we may have more such addresses or lectures, particularly as air travel is now so convenient and space has been greatly diminished accordingly.

I. C. HAINS,
Honorary Secretary.

Maryborough Local Medical Association.

Several meetings have been held during the year to discuss lodge capitation fees, the annual meeting being held on October 14, 1945.

Office-bearers elected are: President, Dr. A. J. Kennedy; Honorary Secretary, Dr. O. E. Nothling; other members are Dr. D. T. Rushton Smith, Dr. K. H. Hooper, Dr. Egmont Theile, Dr. Alice M. Theile.

It was resolved at the annual meeting to draw up a constitution and submit a draft to the members in one month's time.

EGMONT THEILE,
For the Honorary Secretary.

Townsville Local Medical Association.

The annual meeting of this Association was held on August 16, 1945.

Election of officers was as follows: President, Dr. W. B. Chapman; Honorary Secretary-Treasurer, Dr. L. Halberstater; the other members are Dr. H. A. Sundstrup, Dr. John Breinl, Dr. A. G. Bennett, Dr. V. F. A. O'Neill, Dr. F. R. Tod Stevens, Dr. G. H. Moore, Dr. Beatrice Nelson, Dr. W. J. Chapman.

It was decided to undertake negotiations with the lodges for variation of fees. Negotiations are proceeding.

L. HALBERSTATER,
Honorary Secretary.

Other Local Medical Associations.

The Cairns and Kingaroy Local Medical Associations report that, owing to the war position, they are unable to hold meetings.

British Medical Agency of Queensland, Proprietary, Limited. Queensland Medical Finance, Proprietary, Limited.

After five years' service with the Royal Australian Navy, Mr. S. N. Cobbold resumed the managership of the agency and the secretaryship of the Queensland Medical Finance, Proprietary, Limited, in September last. He subsequently made a tour of south-eastern Queensland with a view to assisting members released from the armed forces to reestablish themselves in civilian practice.

Mr. F. K. Davis, who was acting manager and secretary of the two companies respectively, is remaining on as assistant to Mr. Cobbold, and will still carry on all services to members hitherto attended to by him.

Whilst extending a welcome to Mr. Cobbold and wishing him every success in the future, the Council desires to place on record its appreciation and thanks to Mr. Davis for the able manner in which he carried out his duties and assistance to members during the difficult period of the war years.

During the year a Ford sedan car has been purchased by the agency and is available to members on a "Drive Yourself" basis. It is for use at such times as members' own cars are out of commission, and has proved a very useful service.

Pharmaceutical Benefit's Act, 1944.

The implementation of the *Pharmaceutical Benefits Act* by the Commonwealth Government is still a matter for conjecture, as its validity has been tested in the Victorian courts by the Attorney-General of that State. The verdict is awaited with interest.

In October last an unsatisfactory conference took place between the Federal Council of the British Medical Association and the Acting Minister for Health. At the conference the Minister was asked whether the Government was prepared to meet the four objections of the Federal Council to the act. Upon a negative reply being received, the Minister was informed that the Federal Council's policy of noncooperation with the Government would continue.

Members of the Branch will be advised further on the matter in the event of the implementation of the act being proclaimed.

In July, Dr. J. G. Hunter, General Secretary of the Federal Council, visited Queensland with the object of informing members of the Branch of the latest developments in connexion with the *Pharmaceutical Benefits Act.* He addressed members at an extraordinary general meeting of the Branch, and, accompanied by Dr. Alan Lee, he made a tour of south-western Queensland, and contacted practically all the medical practitioners in the various towns visited, either individually or at meetings, and placed before them the views of the Federal Council on the act. In addition, he addressed representatives of the Trades and Labour Council concerning the views of the organized profession in relation to the *Pharmaceutical Benefits Act.*

Federal Council.

During the year two meetings of the Federal Council were held in Melbourne, at which the Branch was represented by Dr. Alan Lee and Dr. Thos. A. Price at the first meeting, and at the second meeting by Dr. Alan Lee and Dr. D. Gifford Croll (replacing Dr. Price, who was unable to attend). A record of the proceedings of the meetings is published in THE MEDICAL JOURNAL OF AUSTRALIA.

We were pleased to have a visit from the General Secretary of the Federal Council, Dr. J. G. Hunter, in July last.

The *Pharmaceutical Benefits Act,* 1944, is referred to in another part of this report, and the question of the general medical services is still *in statu quo.* Both these subjects are of major interest to the medical profession at present and have occupied a great deal of time and thought by the Federal Council.

Many other matters of great importance were dealt with by the Federal Council at its meetings.

A special contribution of £500 was forwarded to the Federal Council by the Branch for organization expenses. This amount was taken from the organization fund of the Branch.

Australasian Medical Publishing Company, Limited.

We are pleased to state that the directors of the company have once again decided to continue the generous rebate to the Branches of ten shillings for each member who has totally relinquished civil practice as at December 31, 1945, for continuous full-time service in His Majesty's Forces.

"The Medical Journal of Australia."

Owing to a printers' strike in New South Wales, publication of the journal has been temporarily suspended as from September 15, and members have been deprived of their copies for a period of nine weeks. This is the first time that The Medical Journal of Australia has ever failed to put in its weekly appearance.

Lists of members of the Branches of the British Medical Association in Australia, published by the Australasian Medical Publishing Company, Limited, are now available at the Branch office.

University of Queensland.

British Medical Association (Queensland Branch): Queensland Medical Students' Loan Fund.—The personnel of the committee of administration is as follows: Dr. C. A. Thelander (chairman), Professor H. J. Wilkinson, Dr. E. S. Meyers, Dr. Alex Murphy, Dr. Arnold Robertson (a representative of the University of Queensland Medical Society, nominated annually by the society) and the *ex-officio* members of the Council. The President attended a meeting of medical students on May 8, when the objects of the loan fund were put before them. The fund now stands at £346 0s. 4d., and during the year £15 1s. was donated by medical students and £55 18s. 9d. by members of the Branch.

Faculty of Medicine.—At meetings of the faculty of medicine the Branch is represented by the President, upon the nomination of the Senate. This provides a valuable liaison between the Association and the faculty of medicine. An important matter under discussion during the year was the revised medical curriculum, soon to be embarked upon at this university.

Queensland Post-Graduate Medical Education Committee.—This committee is working in close relationship with the British Medical Association in regard to the rehabilitation of medical officers returned from the services, and is taking an active part in the educational aspect of the matter.

University of Queensland Medical Society.—Dr. W. H. Steel has been appointed to act as liaison officer between the Branch Council and the society. Assistance was rendered in obtaining non-medical books for the society's library to be established for the use of undergraduate members, and several members of the Branch donated suitable books for this purpose.

Harold Plant Memorial Prize, 1945.—This prize was awarded to Desmond Neville Bottcher, and was presented to him by the President of the Branch at the Jackson Lecture held on September 7.

Eustace Russell Memorial Prize, 1945.—The winner of this prize was Donald Nicholson O'Reilly, and was presented by the President of the Branch at the Jackson Lecture on September 7.

William Nathaniel Robertson Medal, 1945.—Advice was received from the Registrar of the University of Queensland that this medal was won by Desmond Neville Bottcher.

Joseph Bancroft Memorial Lecture.

Brigadier N. Hamilton Fairley, O.B.E., M.D., F.R.S., delivered the 1945 Joseph Bancroft Memorial Lecture on Friday, June 1, in the Medical School Hall on the subject of "Tropical Medical Research in the Australian Army". There was an attendance of 51 members and visitors. A vote of thanks to the lecturer was moved by Dr. Ellis Murphy and seconded by Dr. C. C. Minty. At the conclusion of the lecture the President presented the Bancroft Memorial Medal to Brigadier Fairley.

Jackson Lecture.

On Friday, September 7, the Jackson Lecture, which is given annually in memory of the late Ernest Sandford Jackson, was delivered by Dr. S. Julius, his subject being "The History of Medicine in Soviet Russia".

Social.

Council Dinner.—Prior to the Bancroft Lecture, the President and members of the Council entertained the lecturer, Brigadier N. Hamilton Fairley, at dinner at the Belle Vue Hotel on Friday, June 1. Other guests at the dinner were Surgeon Captain Lambert Rogers, Commander in Chief, British Pacific Headquarters; Surgeon Captain C. Keating, Medical Officer in Charge, Royal Naval Hospital, Brisbane; Surgeon Commander Gavin Cameron, Senior Medical Officer, Royal Australian Navy, Brisbane; Colonel K. B. Fraser, D.D.M.S., Headquarters, Queensland L. of C. Area; Wing Commander Wicks, D.P.M.O., R.A.A.F., Brisbane; Dr. Ellis Murphy, Chairman, Queensland State Committee, Royal Australasian College of Physicians; Dr. J. J. Power, Chairman, Queensland State Committee, Royal Australasian College of Surgeons; Dr. S. F. McDonald.

Dinner to Returned Prisoners of War Members.—One of the most enjoyable functions ever held by the Branch was a dinner party at Lennon's Hotel on November 15, to give members an opportunity of extending a welcome to Major B. L. W. Clarke, Major Clive Uhr, Captain C. R. Huxtable, M.C., Captain Clive Boyce and Captain L. P. Sapsford. Seventy-five members of the Branch were present.

Finance.

It will be noted from the balance sheet that the net surplus for the year was £225 11s. 8d.

Conclusion.

It must be appreciated that this report to the members mirrors only in part the enormous volume of business dealt with by the Council in the year now past.

The document would be incomplete without reference to the ready spirit of cooperation shown by all, whether at council meetings, on committees, or in other matters where personal sacrifice of time and energy has been called upon in the interests of the public or the profession.

Nor would the efficient working of our organization have been possible without the diligence and ability of the Secretary (Mrs. Spooner) and her staff, in which respect the Queensland Branch is indeed fortunate.

In the presentation of the report I have no hesitation in commending the work of your representatives at all times.

(Signed) H. W. Horn,
President.

Balance Sheet and Financial Statement.

The balance sheet and financial statement for the year ended November 15, 1945, were taken as read and adopted on the motion of Dr. J. G. Wagner, seconded by Dr. A. E. Lee. The statements are published herewith.

Election of Office-Bearers.

The President announced the results of the election of office-bearers and members of the Council.

President: Dr. J. G. Wagner.
President-Elect: Dr. Horace Johnson.
Past President: Dr. H. W. Horn.
Honorary Secretary: Dr. Norman Sherwood.
Councillors: Dr. H. W. Anderson, Dr. Felix Arden, Dr. R. V. Adamson, Dr. T. V. Stubbs Brown, Dr. E. W. Casey, Dr. D. Gifford Croll, Dr. Milton Geaney, Dr. Alan E. Lee, Dr. F. W. R. Lukin, Dr. C. C. Minty, Dr. J. G. Morris, Dr. T. A. Price, Dr. W. H. Steel, Dr. L. P. Winterbotham.

Ethics Committee.

Dr. M. Graham Sutton, Dr. L. J. J. Nye, Dr. S. F. McDonald, Dr. J. J. Power, Dr. R. G. Quinn, Dr. J. G. Avery and Dr. G. P. Dixon were elected members of the Ethics Committee.

Election of Auditors.

Messrs. R. G. Groom and Company were reelected auditors on the motion of Dr. J. G. Wagner, seconded by Dr. Robin Charlton.

Memorial Roll.

The President read the Memorial Roll of the Branch and gave a list of the foundation members as follows: Joseph Bancroft, Kearsey Cannan, Ernest Sandford Jackson, John Mowbray Thomson, Charles Ferdinand Marks, William Nathaniel Robertson, Donald Allan Cameron, William Frederick Taylor, Peter Bancroft, Joseph Espie Dods, James

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Balance Sheet as at November 15, 1945.

LIABILITIES.	£	s.	d.	£	s.	d.
Fixed Liabilities—						
Loan from Queensland Medical Land Investment Company, Limited ..				4,650	0	0
Current Liabilities—						
Subscriptions for Remittance to:						
British Medical Association, London	28	16	5			
Australasian Medical Publishing Company, Limited, Sydney ..	27	0	0			
				55	16	5
Association Funds—						
Accumulation Account	5,116	14	5			
Sinking Fund	388	5	3			
Reserve for Dinners, Entertainments, etc.	28	8	0			
				5,533	7	8
				£10,239	4	1

ASSETS.	£	s.	d.	£	s.	d.
Fixed Assets, at cost, less depreciation—						
Land and Buildings—B.M.A. House	2,428	10	9			
Library	150	0	0			
Typewriters, Bookcases, Balopticon and Furniture	84	10	5			
Bancroft Medals and Collar	4	10	0			
				2,667	11	2
Queensland Medical Land Investment Company, Limited—5,950 Shares of £1 each paid to 10s. each—at cost	2,975	0	0			
British Medical Agency of Queensland Proprietary, Limited—257 Shares of £1 each, fully paid—at cost	257	0	0			
				3,232	0	0
Australian Consolidated Inscribed Stock—						
3¼%, maturing 1959	1,500	0	0			
3¼%, maturing 1960	300	0	0			
				1,800	0	0
Australasian Medical Publishing Company, Limited—						
5% Debentures—at cost				55	0	0
				7,754	11	2
Current Assets—						
English, Scottish and Australian Bank, Limited—Credit Balance, Current Account	1,478	3	11			
Sundry Debtors	608	0	0			
Electric Light Deposit	6	0	0			
Cash in Hand	4	3	9			
				2,096	7	8
Sinking Fund Investments—						
Australian Consolidated Inscribed Stock—						
£280: 3¾%, maturing 1951, at cost	278	3	3			
£90: 3¾%, maturing 1960	90	0	0			
Commonwealth Savings Bank, Brisbane—Credit Balance	20	2	0			
				388	5	3
				£10,239	4	1

We have compared the above Balance Sheet with the Books, Accounts and Vouchers of the Queensland Branch of the British Medical Association (Incorporated), and have obtained all the information and explanations we have required. The Register of Members and other records which the Company is required to keep by the Companies Acts of 1941-1942, or by its Articles, have, in our opinion, been properly kept.

In our opinion, the Balance Sheet is properly drawn up to exhibit a true and correct view of the state of the Association's affairs as at 15th November, 1945, according to the best of our information and the explanations given us, and as shown by the books of the Association.

R. G. GROOM & COMPANY,
Chartered Accountants (Aust.),
Auditors.

(Sgd.) J. G. WAGNER,
Honorary Treasurer.

Brisbane, 18th November, 1945.

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Revenue Account for Twelve Months ended November 15, 1945.

EXPENDITURE.	£	s.	d.	£	s.	d.
November 15, 1945.						
To Branch Expenses	947	16	8			
,, Library Expenditure	60	17	7			
,, Depreciation of Office Equipment ..	8	16	9			
				1,017	11	0
,, Federal Council—						
Contribution to Expenses	464	5	0			
Special Contribution to Council Expenses	500	12	6			
				964	17	6
,, Expenses, B.M.A. House—						
Rates, Land Tax, Insurance, Repairs and Sundries	156	5	3			
Cleaning	78	0	0			
Depreciation, Building	48	17	5			
	283	2	8			
Less Rents Received	249	0	0			
				34	2	8
,, Net Surplus for Year—						
Transferred to Accumulation Account				225	11	8
				£2,242	2	10

REVENUE.	£	s.	d.	£	s.	d.
November 15, 1945.						
By Branch and Organization Fund Subscriptions				2,176	0	3
,, Interest—						
Commonwealth Government Inscribed Stock	58	1	2			
Australasian Medical Publishing Company, Limited, Debentures	2	15	0			
				60	16	2
,, Sale of Nutrition Pamphlets ..				5	6	5
				£2,242	2	10

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

GENERAL FUND.

Statement of Receipts and Payments for Twelve Months ended November 15, 1945.

RECEIPTS.

				£	s.	d.	£	s.	d.
November 16, 1944.									
To Funds at November 16, 1944—									
English, Scottish and Australian Bank, Limited—Current Account				1,161	4	8			
Cash in Hand				1	14	11			
							1,162	19	7
November 15, 1945									
To Subscriptions—									
For Remittance to British Medical Association, London ..				828	17	3			
For Remittance to THE MEDICAL JOURNAL OF AUSTRALIA, Sydney				595	12	0			
Queensland Branch Subscriptions				1,091	9	0			
Organization Fund, Queensland Branch				1,084	11	3			
							3,600	9	6
,, General—									
Rent:									
British Medical Agency of Queensland Proprietary, Limited, Part Payment Arrears	£250	0	0						
Basement, Garage and Room ..	28	0	0						
A.T.N.A.	8	0	0						
Medical Defence Society	5	0	0						
				291	0	0			
Sale of Nutrition Pamphlets ..				5	6	5			
Interest on Commonwealth Inscribed Stock				58	1	2			
Australasian Medical Publishing Company, Limited—Interest on Debentures				2	15	0			
							357	2	7
							£5,120	11	8

PAYMENTS.

	£	s.	d.	£	s.	d.
November 15, 1945.						
By Amounts remitted on account of Subscriptions Collected to—						
British Medical Association, London	831	6	0			
Australasian Medical Publishing Company, Limited, Sydney ..	599	1	0			
				1,430	7	0
,, Federal Council—						
Contribution to Expenses	464	5	0			
Special Contribution to Council Expenses	500	12	6			
				964	17	6
,, Branch Expenses—						
Salaries, Audit and Honoraria ..	706	4	6			
Postages and Duty Stamps ..	100	12	7			
Printing and Stationery	55	11	2			
Bank Charges, Meeting Expenses and Sundries	29	11	2			
Telephone Rental and Calls ..	28	6	3			
Travelling Expenses	23	5	6			
Electric Light	4	5	6			
				947	16	8
,, B.M.A. House Expenses—						
Rates to December 31, 1945 ..	128	16	8			
Cleaners' Wages, Insurance, Repairs and Maintenance	94	9	10			
State Land Tax	10	18	9			
				234	5	3
,, Library Expenditure				60	17	7
,, Funds at November 15, 1945—						
English, Scottish and Australian Bank, Limited, Brisbane ..	1,478	3	11			
Cash in Hand	4	3	9			
				1,482	7	8
				£5,120	11	8

O'Neil Mayne, John Barr McLean, Hugh Bell, Eustace Russell, Thomas Lane Bancroft.

The President announced that the following names had been added to the roll during the year: Kenneth Joseph Gilmore Wilson, John Lockhart Gibson.

INDUCTION OF PRESIDENT.

Dr. H. W. Horn then inducted Dr. J. G. Wagner to the chair.

PRESIDENT'S ADDRESS.

Dr. J. G. Wagner read his address (see page 97).

THE PROFESSION AND THE PUBLIC.

The following motion was carried at the instance of the President:

> That this annual meeting of the Queensland Branch of the British Medical Association places on record its sincere appreciation of the cooperation given to members of the profession by the civilian public during the war years. Without that cooperation medical practice would have been chaotic.

It was decided that a copy of the resolution should be sent to the Press.

VOTES OF THANKS.

Votes of thanks were passed to the retiring members of Council, the Honorary Secretary and the office staff for their work during the year.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on August 8, 1945, at the Children's Hospital, Carlton, DR. H. DOUGLAS STEPHENS, the Acting President, in the chair.

Transposition of Viscera.

DR. ALAN MCCUTCHEON showed a male patient, aged five years and eleven months. The child had first attended the out-patient department in July, 1943, with a distended abdomen and complaining of coldness and blueness of the extremities. Consanguinity of his parents was established. He next attended the hospital on April 14, 1945, when he was noted to be mentally retarded, and a few rhonchi were audible in the right lung. The heart appeared to be on the right side and the liver on the left side. He had attended at intervals with frequent colds, anorexia and nocturnal enuresis. Dr. McCutcheon showed X-ray films taken at these visits. A barium meal examination was carried out on June 1, 1945; this revealed dexiocardia, congestion of the base of the left lung and transposition of the gastro-intestinal tract. A cholecystogram was taken on July 11, 1945. The gall-bladder, which lay on the left side, was seen to be of normal size and position. It filled with the dye, concentrated it well and contracted after a fatty meal. In none of the films were there any shadows of gall-stones, and there was no evidence of abnormality of the gall-bladder. Dr. McCutcheon said that he was hoping to have a bronchogram taken later, to determine whether transposition of the lungs as well as of the other viscera was present. Dr. McCutcheon wondered whether the consanguinity of the parents might have been a factor in the anomaly in this instance. He had observed, when dealing with such children in institutions, that they were frequently retarded physically or mentally or in both ways.

DR. ROBERT SOUTHBY said that Dr. McCutcheon had covered the ground so fully that there remained little to add. In a plain X-ray film, confusion between dexiocardia and transposition of the viscera might arise, or even between these conditions and a displaced heart. The electrocardiogram was looked upon as revealing the most pathognomonic sign. This showed inversion of all the deflections in Lead I. Dr. Southby said that the patient should wear a disk disclosing his anomaly in case an abdominal operation was contemplated in later years. Dr. Southby asked whether Dr. McCutcheon had observed dexiocardia or transposition of the viscera in offspring of consanguineous parents.

Dr. McCutcheon, in reply, said that he had not previously observed this anomaly in children of consanguineous parents. He intended to study the electrocardiogram and the bronchogram.

Imperforate Anus.

DR. J. G. WHITAKER showed a male child, aged four months, who had an imperforate anus. The confinement had been normal, and after two days it was noted that the baby was having no bowel actions and that the abdomen was becoming increasingly distended. Rectal examination revealed an anal canal only one inch in length, with what felt like a solid block of tissue above. A sigmoid colostomy had been established, and when the baby recovered from this operation, X-ray investigation of the defect with barium filling from the colostomy revealed a probable atresia of the rectum about one to one and a half inches in length. After some difficulty in the feeding of the baby had been overcome, the child was transferred to the Children's Hospital at the age of eight weeks. Examination on his admission to the hospital revealed an infected colostomy wound with a pin-point stoma in the left iliac fossa, and the anal canal was patent for a distance of one to one and a half inches. The rest of the examination revealed no abnormality, except that the baby showed general signs of malnutrition. Soon afterwards, the colostomy opening was dilated with Spencer Wells forceps and bowel irrigations were begun; also daily dilatation of the opening with Hegar's dilators was instituted. A few days later the child was examined bimanually under general anæsthesia by Dr. Whitaker. A finger in the anal canal was separated from the finger above in the descending loop of the colostomy by a deficiency in the lumen of the rectum, the precise thickness of which was difficult to estimate, but was adjudged to be about one inch in length. The future treatment of the baby appeared to be one of three possibilities: (*a*) the establishment of a permanent palliative colostomy, probably in the transverse colon, owing to inadequacy of left iliac colostomy; (*b*) laparotomy and inspection of the bowel from above, to see whether any reconstitution would be possible; (*c*) the insertion of a pair of forceps up through the resisting tissue in the roof of the anal canal, in the hope that this would recanalize the deficiency. Dr. Whitaker said that the above-mentioned propositions had been explained to the parents of the baby and the risks made clear, and advice to allow laparotomy and attempted reconstitution of the bowel if possible had been given. Permission was obtained, and at laparotomy the following features were noted and the lumen of the gut was reconstituted. The distal loop of the sigmoid colon was found to be hypertrophied and dilated to almost adult size, and passed downwards to end suddenly where the rectum became extraperitoneal. At this stage a pair of Spencer Wells forceps was introduced *per rectum* and pushed upwards, and guided by the operator's hand from above, was pushed through the obstructing tissue till it was palpated within the lumen of the lower sigmoid colon above. The sigmoid colon was opened, and a length of rubber tubing was grasped in the forceps, pulled through the opening and made to issue through the anus. This end of the tube was sutured to the skin around the anus. The opening in the sigmoid colon was closed and oversewn, a drain tube was placed in the pelvis and the abdominal wound was closed. The child had made satisfactory progress after operation. Liquid fæces were passed through the rectal tube on the first day, while the iliac colostomy functioned normally and continued to do so for three days, when the tube slipped from the rectum as the restraining sutures sloughed from the perineal skin. It was found that the tube could be replaced easily, and so it was removed completely, and daily dilatation of the reconstituted gut was commenced. From that time the child had passed semi-solid, normal-sized stools *per rectum*, and dilators up to Hegar's Number 13 could be passed with ease. The colostomy had not yet closed. The abdominal wound was almost healed. The child was apparently healthy and making progress. Dr. Whitaker said that only time would determine the ultimate outlook.

Dr. John Begg sought information on the treatment of patients with imperforate anus. He had been injudicious enough to operate on such a patient. The child was left with a perineal anus, but no hope of a satisfactory sphincter mechanism. The alternative of a permanent colostomy offered little solace, though perhaps it was preferable to a perineal anus. Dr. Begg wondered whether such patients should be treated surgically or allowed to die.

Dr. H. C. Colville quoted a recent unusual experience of his own. He said that five years earlier he had examined a baby two hours after birth; the baby had an imperforate anus, as well as a rudimentary tail. Dr. Colville observed that there was a pronounced bulge in the perineum when the baby cried. He punctured the bulging area, and was rewarded by a free flow of cerebro-spinal fluid. He hastily closed this opening and explored the perineum, until he found the rectum and brought it down and sutured it to the region of the anus. At the time of the meeting the child was five years old, and presented the problem raised by Dr. Begg. It could be said that this child was certainly not the "write off" that Dr. Begg had visualized; he was a fine, sturdy little boy, and needed dilatation only at intervals. By careful training, in which the child was encouraged to empty his bowels at a definite time each day, much had been accomplished. During the remainder of the day there was a slight fæcal stain only. Some degree of sphincteric control did develop, though anatomically no sphincter existed. Dr. Colville said that he was wondering whether greater sphincteric control developed in later life, and whether anyone had attempted to construct a sphincter from the adjacent muscles, such as the glutei.

Dr. Robert Southby said that he was interested in a boy who had had a colostomy established when he was a few hours old. The boy went through school and later joined his father in business. He died at the age of twenty years from streptococcal septicæmia, after a full life of comparative comfort.

Dr. Peter Blaubaum asked whether the injection of dye to determine the size of the block of tissue constituting the atresia was a safe procedure.

Dr. H. Douglas Stephens said that he was not nearly so pessimistic as Dr. Begg about imperforate anus; the outlook was hopeful if a bulge could be visualized in the perineum when the baby strained. It was Dr. Stephens's belief that the operative treatment outlined by Ladd and Gross was best. He had removed the coccyx and made an artificial anus posterior to the usual site, but had not found it satisfactory. In some cases it was better to establish a colostomy and drainage. The ultimate result in these cases was interesting. Dr. Stephens said that a few weeks earlier a strong man had walked into his office and told him that he (Dr. Stephens) had operated on him at the Children's Hospital twenty years earlier for imperforate anus. Two years later Dr. Stephens had again operated on him for an inguinal hernia. Later he had found out that he had congenital heart disease. The man was a butcher, and his bowels were open every day. Dr. Stephens said that he asked to see the patient's perineum, and succeeded in passing a Number 22 Hegar's dilator without much difficulty.

(*To be continued.*)

The Royal Australasian College of Surgeons.

A POST-GRADUATE COURSE IN SURGERY.

The Royal Australasian College of Surgeons will conduct in Melbourne a post-graduate course. It will begin on March 4 and conclude on May 31, 1946. The course is suitable for all graduates who wish to undertake post-graduate study in surgery, and is not designed solely for those desiring to present themselves for senior surgical qualifications.

Lectures will be delivered at Prince Henry's Hospital from 2 to 3.30 o'clock p.m. on Mondays, Wednesdays and Fridays. Lecture demonstrations will be held on Tuesdays and Thursdays from 2 to 4 o'clock p.m. From March 5 to April 2 inclusive the demonstrations will take place at the Alfred Hospital; from April 4 to April 23 the venue will be Saint Vincent's Hospital; on April 25 the Children's Hospital; from April 3 to May 23 the Royal Melbourne Hospital.

Lectures and lecture demonstrations will be arranged in the surgical specialities. These will be announced in detail following the receipt of entries which close on January 31, 1946.

Twenty-four lectures and lecture demonstrations in pathology will also be arranged.

MEETINGS OF THE COURTS OF EXAMINERS.

The next meeting of the Courts of Examiners of the Royal Australasian College of Surgeons for the Primary Examination for Fellowship of the College will be held in Melbourne, Australia, and in Dunedin, New Zealand, probably early in June, 1946.

The next meeting of the Court of Examiners for the Final Examination for Fellowship of the College will be held at the College in Melbourne in the first week in June, 1946.

Candidates who desire to present themselves at either of these meetings should apply to the Censor-in-Chief for permission to do so on or before April 1, 1946. The appropriate forms are available from the Secretary of the Royal Australasian College of Surgeons, Spring Street, Melbourne, C.1.

The Royal College of Obstetricians and Gynaecologists.

EXAMINATION FOR MEMBERSHIP.

Candidates who have not indicated their intention to sit for the examination for membership of the Royal College of Obstetricians and Gynæcologists are asked to do so as soon as possible. All inquiries should be addressed to Professor R. Marshall Allan at the University of Melbourne.

Post-Graduate Work.

COURSES IN QUEENSLAND IN 1946.

The University of Queensland Post-Graduate Medical Education Committee announces that the following courses will be held in 1946.

General Revision Course.

The general revision course is of thirteen weeks' duration and will be repeated twice during the year, so that there will be continuous clinical lecture demonstrations throughout 1946. In this way, any service medical officer granted three months' pre-discharge training, any ex-service medical officer granted three months' post-discharge rehabilitation training or any post-graduate training to attend a general refresher course, by joining the class at any time during the year and attending the sessions set out in the time-table to be circulated, will cover the five parts of the course.

Part I: Pædiatrics, of three weeks' duration, commencing on Monday, February 4, 1946.

Part II: Medicine, of three weeks' duration, commencing on Monday, February 25, 1946.

Part III: Obstetrics and gynæcology, of two weeks' duration, commencing on Monday, March 18, 1946.

Part IV: Surgery, of three weeks' duration, commencing on Monday, April 1, 1946.

Part V: The specialities, of two weeks' duration, commencing on Monday, April 22, 1946.

Three or four lecture demonstrations will be held each week, in the afternoon or evening, during each part of the course. The time and place of each lecture will be indicated on a detailed programme shortly to be circulated.

Course II, a repetition of Course I, will commence on Monday, May 6, 1946.

Senior Course in Medicine.

The senior course in medicine is suitable for candidates preparing themselves for the M.R.A.C.P. and M.D. examinations. This will be run concurrently with Part II (medicine) of the general revision course, which will be supplemented by lecture demonstrations in pathology, clinical rounds in the medical wards *et cetera*.

Anatomy and Principles of Pathology.

This course is suitable for candidates preparing themselves for the M.S. (Part I). This is term III of the course, parts I and II of which were held in 1945. Term III will commence sometime in March, on a date to be announced later. Term III (anatomy) will cover the anatomy of the extremities, in ten evening courses, each of which is of two hours' duration. The "Principles of Pathology" will also be covered in ten lectures. The fees for this course will be £7 7s. per subject per term, providing nine members take the full course.

Bancroft Oration and Post-Graduate Week.

The Bancroft Oration will be delivered on June 7, 1946, and will be followed by post-graduate week, June 7 to 14, 1946.

Week-End Courses in Country Centres.

Week-end courses to be held in country centres will be announced later.

Post-graduate students are welcome at the medical school library for study purposes. Books and journals may not be removed from the library.

Service medical officers and ex-service medical officers desiring further information on post-graduate study should communicate with Dr. P. H. Macindoe, Medical School, Herston Road, Brisbane (telephone: BO 534).

Correspondence.

THE USE AND MISUSE OF TETANUS ANTITOXIN.

Sir: A pamphlet, wrapped round each container of antitoxin, is issued by the Commonwealth Serum Laboratories, in which it is set out, under the heading, Directions for Use: "If the subcutaneous route is chosen the most favourable position for injection is under the loose skin of the lower abdomen." In Sydney and suburbs this direction seems to me to be almost universally ignored. The upper arm is the site selected, with the almost inevitable result that the unfortunate patient experiences a more or less severe reaction; the reaction frequently is so severe that he is disabled and suffers much more from the treatment than from the original injury. My experience is that such reaction and incapacity do not eventuate if the proper site is chosen for the injection.

While no one questions the expediency of administering tetanus antitoxin in cases of penetrating wounds, such as puncture by nails in the feet or puncture by cargo hooks and in lacerated, contused or dirty wounds, it does, however, seem to me unnecessary and overdoing it to follow the same procedure in ordinary clean-cut quite superficial wounds. Having in mind that the tetanus bacillus is anaerobic, it would be more appropriate to administer antitetanic serum to everybody who runs a rose thorn into their finger or pricks it with a needle or pin. Like so many other useful remedies, it is overdone.

Some years ago I had occasion to investigate the morbidity and fatal cases from tetanus in New South Wales; the statistics showed that the principal incidence was in children under ten years of age who contracted it from penetrating wounds in bare feet. In adults frequently the origin and mode of infection were not discovered. It was also found that it was as common in clerks as in fellmongers and there were several cases after septic abortion. I have known more than twenty sheep die from it after shearing in one shed, and the infection was traced to a particular tar pot that was used for dressing the wounds caused at shearing.

I have been prompted to write this note in the hope that a little more discretion and horse-sense may be exercised in administering the antitoxin, because I have seen such a number of cases of suffering and disability from its misuse.

Yours, etc.,

Stratford Sheldon, M.B., Ch.M., B.Sc.

28, O'Connell Street,
Sydney,
December 12, 1946.

FUNCTIONAL DISORDERS.

Sir: Half the patients seen in general practice have nothing organically wrong with them. This opinion has been frequently expressed and statistically confirmed by J. B. Barton. These patients are suffering from functional disorders of various kinds, including neurasthenia, anxiety states, functional dyspepsia, cardiac, gastric, ocular, bladder, genital and other neuroses, stammering, writer's cramp, behaviour disorders, globus, hysterical aphonia, conversion hysteria with backache or pains in the limbs, coccydynia, frigidity, epileptiform attacks and many other conditions. We have been accumstomed to prescribing "nerve tonics", alkaline powders, bromide or phenobarbital, changing their glasses, or ordering a holiday, with indifferent results.

Recently Evan Jones, of Sydney, Bostock, of Brisbane, T. A. Ross in England, Kraines in America and others have indicated that most of these illnesses respond dramatically to psychotherapy, and experience has shown that some can be cured in an hour.

Although these cases comprise half the work of the general practitioner, our medical periodicals are almost silent on the subject, and this letter is an appeal for more articles on the functional disorders in this journal.

Yours, etc.,
A. A. PAIN.

142, Concord Road,
Concord,
New South Wales.
January 19, 1946.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 9, of January 17, 1946.

PERMANENT NAVAL FORCES OF THE COMMONWEALTH (SEA-GOING FORCES).

To be Surgeon Captain.—Surgeon Commander Denis Adrian Pritchard.

AUSTRALIAN ARMY MEDICAL CORPS.

NX34968 Lieutenant-Colonel R. F. K. West relinquishes command of 3rd/14th Australian Field Ambulance, 7th November, 1945.

The following officers are placed upon the Regimental Supernumerary List: SX1464 Lieutenant-Colonel R. G. Champion de Crespigny, 7th November, 1945, and WX3416 Major (Temporary Lieutenant-Colonel) G. C. Moss, 8th November, 1945.

WX3330 Colonel (Temporary Brigadier) A. L. Dawkins, O.B.E., E.D., relinquishes the rank of Temporary Brigadier and is transferred to the Reserve of Officers (Australian Army Medical Corps) with the rank of Colonel and is granted the rank of Honorary Brigadier, 14th November, 1945.

VB116930 Local Lieutenant-Colonel F. S. Gorrill ceases to be seconded and relinquishes the rank of Local Lieutenant-Colonel and ceases to be attached to the Australian Military Forces, 24th October, 1945.

2nd/6th Australian General Hospital.—VX65536 Captain J. M. McCracken is placed upon the Regimental Supernumerary List, 27th August, 1945.

102nd Australian Casualty Clearing Station (Australian Imperial Force).—NX107907 Major R. C. Scobie is placed upon the Regimental Supernumerary List, 16th November, 1945.

Q273987 Honorary Captain L. I. Burt is appointed from the Reserve of Officers (Australian Army Medical Corps) and to be Captain, 22nd October, 1945.

New South Wales Lines of Communication Area: To be Honorary Captain, 16th November, 1945.—James Lincoln Kelly.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The probationary appointments of the following Flight Lieutenants are confirmed with effect from the dates indicated: C. F. Bellemore (267567), 13th March, 1944, D. A. S. Morgan (287465), 19th September, 1945.—(Ex. Min. No. 5—Approved 11th January, 1946.)

Obituary.

JAMES WHITSON KEMP BRUCE.

WE regret to announce the death of Dr. James Whitson Kemp Bruce, which occurred on January 22, 1946, at North Sydney, New South Wales.

Diary for the Month.

JAN. 31.—South Australian Branch, B.M.A.: Scientific Meeting.
FEB. 1.—Queensland Branch, B.M.A.: Branch Meeting.
FEB. 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
FEB. 6.—Victorian Branch, B.M.A.: Branch Meeting.
FEB. 6.—Western Australian Branch, B.M.A.: Council Meeting.
FEB. 7.—South Australian Branch, B.M.A.: Council Meeting.
FEB. 8.—Queensland Branch, B.M.A.: Council Meeting.
FEB. 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
FEB. 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
FEB. 21.—South Australian Branch, B.M.A.: Council Meeting.
FEB. 21.—Victorian Branch, B.M.A.: Executive Meeting.
FEB. 22.—Queensland Branch, B.M.A.: Council Meeting.
FEB. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 27.—Victorian Branch, B.M.A.: Council Meeting.
FEB. 28.—South Australian Branch, B.M.A.: Scientific Meeting.
MARCH 1.—Queensland Branch, B.M.A.: Branch Meeting.
MARCH 2.—Tasmanian Branch, B.M.A.: Annual Meeting.
MARCH 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

Medical Practices, etc.

Medical.

1. Unopposed country practice, excellent climate, south N.S.W. Average cash take £1,200. Good public hospital. Premium £1,000.
2. Unopposed subsidized practice, northern N.S.W. Cash take £1,100. Residence to rent. Price £600.

Wanted.

Ophthalmic assistantship wanted by doctor keen to specialize.

All Enquiries Confidential.

GOYDER, SON & CO.,
Medical Agents,
Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.
After Hours: JA 7202.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)
NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.
Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary.

MISS E. P. EVANS,
Manchester Unity Building, 185 Elizabeth Street, Sydney.
(MA 2031.)

APPLICATIONS are invited for the position of Medical Practitioner for Kimba District in South Australia. Practice covers a radius of approximately 35 miles. Guarantee by District Council of £1,000 p.a. Well-equipped government subsidized hospital at Kimba. Further particulars may be obtained from the Secretary, Kimba Hospital, Kimba, S.A.

RENWICK HOSPITAL FOR INFANTS, SUMMER HILL. Applications, on prescribed form, are invited for the position of Resident Medical Officer. Salary at the rate of £4 p.w. Vacancy March. Particulars, Medical Superintendent.—W. B. RODD, Secretary, Benevolent Society of N.S.W., General Offices, Thomas Street, Sydney.

WANTED TO PURCHASE, General Practice in or near Sydney. Cash available. Particulars to Dr. A.B.C., this Office.

SPEECH THERAPY.

Remedial Treatment for Reading, Writing, Speech and Voice Disorders.

MISS WRAY, A.S.S.T., London.
Speech Therapist to R.A.H.C., Sydney.
281 Macquarie Street, Sydney.
'Phone: B 4650.

Service for Doctors

Watson House, Bligh Street, Sydney.
Telephone: BW4433.

No. 590.—Radiological practice in base hospital town. Goodwill and X-ray plant for sale. Professional rooms and private residence to rent. Scope increase takings.

No. 591.—Assistant required, view partnership, large Sydney outer suburban practice. Opportunity young married ex-service surgeon, Prot.

No. 586.—Unopposed north-western district, N.S.W., country practice, taking £2,000. Excellent hospital. Substantial appointments. Brick house to rent. Goodwill for sale. Pre-war takings over £3,000.

No. 574.—N.S.W. country practice, opposed, taking over £2,000. Appointments worth £350. Mids. 70. Large district intermediate hospital. Goodwill for sale. Modern house to rent. Opportunity young married ex-service practitioner.

No. 567.—Base hospital town, E.N.T. Practice taking £2,750 p.a. Goodwill and modern residence for sale.

Locum tenens available for short term, suburban or country work, from February 4.

Particulars in Confidence.

WATSON VICTOR

LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

ROYAL HOBART HOSPITAL: RE-ORGANIZATION MEDICAL STAFF.—Following the re-organization of medical staff, applications are invited from fully qualified and registered medical practitioners for the following posts. *Medical Registrar:* Commencing salary £750, rising to £800 per annum in second year. Duties include the supervision, investigation and treatment of all medical cases admitted to hospital, also the work and case recording of junior resident medical officers, according to the wishes of the Superintendent and honorary physician in charge of the beds. Applicants to have held the post of a senior resident medical officer in a hospital and interested in medicine. The post is suitable for one working for his M.R.A.C.P. *Senior Resident Medical Officer:* At least two years' hospital experience necessary. Duties include the supervision, investigation and treatment of obstetrical and gynæcological cases under the honorary obstetricians and gynæcologists to the hospital. Commencing salary £550 per annum plus board and residence. Accommodation for single men—living out allowance payable to married men. Applications stating age, experience and qualifications, together with copies of recent testimonials, and clearly stating position sought, close with the undersigned on February 20, 1946. Successful applicants to commence duty March 15, 1946.—H. M. WRIGHT, Secretary, Box 495, G.P.O., Hobart.

FOR SALE, Practice, North Shore Line. Takings about £3,000. Modern house for sale. Moderate lodge list. No surgery undertaken. Apply "P.B.", c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer St., Glebe, Sydney, N.S.W.

COMMONWEALTH DEPARTMENT OF HEALTH: Vacancy for Chief Medical Officer (Exempt), Darwin, N.T. — CONDITIONS OF SERVICE.— *Salary Range:* £1,202 to £1,352 (annual increments of £50). The above salary is inclusive of cost of living adjustment, which at present is £40 per annum. In addition, district allowance of £100 p.a. (married) or £80 p.a. (single) is payable. *Duties:* He will be responsible, under the Director-General of Health, for all medical services in the Northern Territory, the control of hospitals, the leper station, quarantine, aerial medical services, and public health generally. He should possess sound professional knowledge, be a good administrator, and possess a diploma in public health or tropical medicine. *Hours of Duty:* No fixed hours. The Chief Medical Officer is not regarded as eligible for special monetary compensation for overtime, Sunday or holiday duty. No right of private practice. No superannuation. Motor-car transport provided; or mileage allowance at Public Service rates, if using own car. Housing and furniture deductions from salary at Public Service rates: (*a*) if occupying departmental quarters in Darwin, the deduction of rent to be at the rate of 10% of the minimum salary of the position. *Furniture:* Rented on the basis of 10% of the purchase price in all cases where official furniture is provided. *Fares:* Fares to the Northern Territory will be paid by the department, but, in the event of the appointee not remaining in the service for at least six months, he may be required to refund the fare paid on his behalf. *Recreation Leave:* Thirty-six (36) days per annum exclusive of Sundays and holidays, which may be allowed to accumulate for three consecutive years. Recreation leave to be granted in respect of each completed twelve months' continuous employment. *Travelling Time for Recreation Leave:* Seven (7) days each way. This travelling time is the maximum period which may be allowed, irrespective of the locality in which the employee spends recreation leave or whether leave is accumulated or enjoyed annually, provided that where a lesser period is occupied in travelling, the travelling time should be correspondingly reduced. *Sick Leave:* In accordance with Public Service conditions. Engagements may be terminated at any time without notice by the Director-General of Health on the grounds of misbehaviour or inefficiency; otherwise it may be terminated by one month's notice in writing by either the Director-General of Health or the appointee. Preference will be accorded to persons with the necessary qualifications, in accordance with the provisions of the Re-establishment and Employment Act (No. 11 of 1945). Applications showing full name, date and place of birth, war service (if any) and full details of qualifications and experience should be forwarded to reach the Director-General of Health, Canberra, A.C.T., on or before 9th February, 1946.

FOR PRIVATE SALE, X-Ray Practice in convenient country centre. For further particulars apply XYZ, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

EXPERIENCED PRACTITIONER wants to buy suburban practice, preferably partnership, in Adelaide. All information confidential. Apply to No. 94, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

STORER-HARRISON X-RAY COMPANY

FOR EVERYTHING ELECTRICAL IN MEDICINE

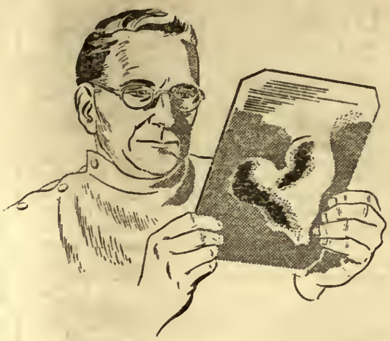
- Ediswan Electric Convulsion Therapy Apparatus.
- Infra-Red Generators.
- Ultra-Violet Lamps.
- Short-Wave Diathermy.
- Surgical Diathermy.
- Faradic/Galvanic Apparatus.
- X-Ray Apparatus.
- X-Ray Accessories.
- Equipment Hire Service.

Further Particulars:

STORER-HARRISON X-RAY COMPANY
67 Hunter Street, Sydney
BW 5122 BW 7277

AUCKLAND HOSPITAL BOARD, NEW ZEALAND. Applications addressed to the undersigned and closing on the 28th day of February, 1946, are invited from Registered Medical Practitioners of the British Empire of at least ten years' standing and having wide clinical and administrative experience, for appointment as Superintendent-in-Chief of the Board's institutions at a salary of £2,000 per annum, payable monthly, rising by annual increments of £50 to a maximum of £2,250 living out (New Zealand currency). The Board's institutions include four major hospitals accommodating 2,600 patients, with other hospitals in course of planning. The position will be wholly administrative. Conditions of appointment, accompanying explanatory memorandum and official form of application may be obtained on request to the Secretary, P.O. Box 2200, Auckland, New Zealand. Applications should be endorsed on envelope "Superintendent-in-Chief".—R. F. GALBRAITH, Secretary.

COMMONWEALTH OF AUSTRALIA, DEPARTMENT OF HEALTH: Vacancies for Position of Medical Officer.—Applications are invited for appointment to the positions of Medical Officer, Commonwealth Department of Health. Salary range is £720 to £864 (standard), subject to cost of living adjustments, which raises the salary at the present time to £760 to £904 (actual). The annual increments are £36. The position will be exempt from the provisions of the Commonwealth Public Service Act. A number of positions are in the laboratory services of the department, for which a course of training is provided after appointment. Applicants must be medical graduates between 25 and 35 years of age, should produce evidence of sound professional knowledge, and be prepared to perform duty anywhere in Australia. Preference will be accorded to persons with the necessary qualifications in accordance with the provisions of the Re-establishment and Employment Act (No. 11 of 1945). Applications showing full name, marital status, and date and place of birth should be forwarded to the Director-General of Health, Canberra, A.C.T.



FOR SYMPTOMATIC RELIEF AND TREATMENT OF PEPTIC ULCER

Following the investigation of Mutch (B.M.J., October, 1937), the therapeutic value of Hydrated Magnesium Trisilicate was established. Having a ratio of MgO to SiO_2 of 1 to 2.24, Trinesium Stearns is in exactly the form advocated by Mutch. Clinical tests have established the efficacy of Trinesium in the management and treatment of peptic ulcer. It provides protection against the corrosion of the ulcer bed, together with continuous control of hyperacidity and sustained adsorbent action.

In combination with the gastric juices Trinesium forms a silica gel over the ulcer, thus providing mechanical protection for the ulcer. By its neutralising action and its potent adsorbing power, Trinesium can create a pepsin-free and acid-free zone. This guards the raw ulcer area from further irritation and corrosion due to digestive activities.

Mutch found that with Magnesium Trisilicate, a minimal amount of mineral base controls hyperchlorhydria continuously.

TRINESIUM
TRINESIUM TABLETS

Samples and further literature on Trinesium will be gladly sent to the medical profession on request to Frederick Stearns & Company Division, Box 3286, G.P.O., Sydney.

Trinesium
STEARNS

FACTS ABOUT TRINESIUM

ANTACID Trinesium relieves gastric hyperacidity within a few minutes. The single dose will control excess acid for the entire period of gastric digestion.

ADSORPTIVE Mutch reports that, as an adsorbent, Magnesium Trisilicate "far transcends bismuth salts, magnesia, aluminium hydroxide or other medicaments in common use.".

ANTIPEPTIC The silica gel formed by Trinesium provides mechanical protection for stomach ulcers. It subdues pain and inflammation and helps to achieve healing.

DOSAGE Trinesium (Hydrated Magnesium Trisilicate) is available in bottles containing 1¾ oz., and in tablet form. Average dose is 21 grains (one level teaspoonful).

ACCEPTED AMERICAN MEDICAL ASSN

Frederick Stearns & Company
Division

SYDNEY, AUSTRALIA

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS SIMPSON, of Fairholm Street, Strathfield, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 9, 1946. No. 6.

FOR SYMPTOMATIC RELIEF AND TREATMENT OF PEPTIC ULCER

Following the investigation of Mutch (B.M.J., October, 1937), the therapeutic value of Hydrated Magnesium Trisilicate was established. Having a ratio of MgO to SiO_2 of 1 to 2.24, Trinesium Stearns is in exactly the form advocated by Mutch. Clinical tests have established the efficacy of Trinesium in the management and treatment of peptic ulcer. It provides protection against the corrosion of the ulcer bed, together with continuous control of hyperacidity and sustained adsorbent action.

Mutch found that with Magnesium Trisilicate, a minimal amount of mineral base controls hyperchlorhydria continuously.

TRINESIUM
TRINESIUM

Samples and further literature on Trinesium will be gladly sent to the medical profession on request to Frederick Stearns & Company Division, Box 3286, G.P.O., Sydney.

Trinesium
STEARNS

Frederick Stearns & Company
Division
SYDNEY, AUSTRALIA

FACTS ABOUT TRINESIUM

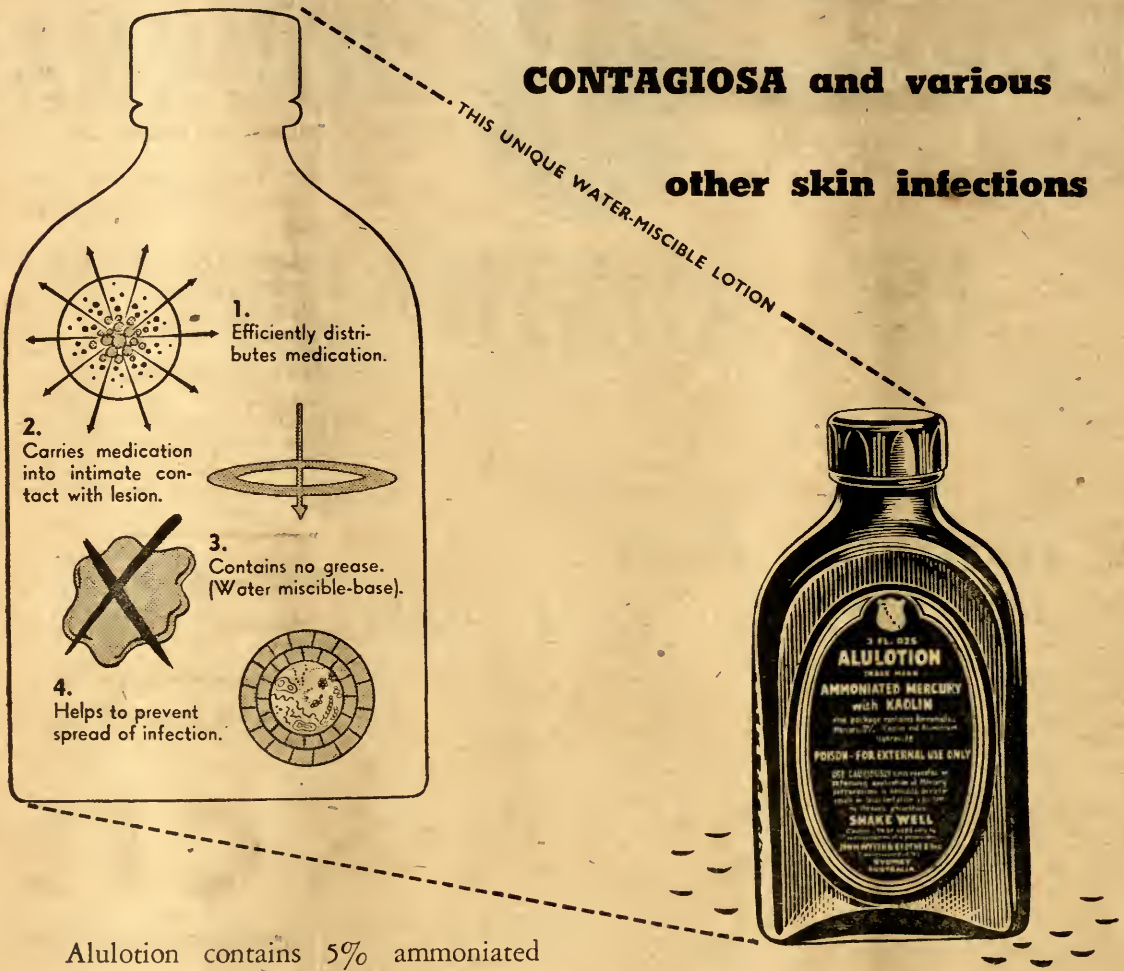
ANTACID Trinesium relieves gastric hyperacidity within a few minutes. The single dose will control excess acid for the entire period of gastric digestion.

ADSORPTIVE Mutch reports that, as an adsorbent, Magnesium Trisilicate "far transcends bismuth salts, magnesia, aluminium hydroxide or other medicaments in common use."

ANTIPEPTIC The silica gel formed by Trinesium provides mechanical protection for stomach ulcers. It subdues pain and inflammation and helps to achieve healing.

ACCEPTED AMERICAN MEDICAL ASSN Council on Pharmacy and Chemistry

For the local treatment of IMPETIGO CONTAGIOSA and various other skin infections


THIS UNIQUE WATER-MISCIBLE LOTION
1. Efficiently distributes medication.
2. Carries medication into intimate contact with lesion.
3. Contains no grease. (Water miscible-base).
4. Helps to prevent spread of infection.
ALULOTION
AMMONIATED MERCURY with KAOLIN
POISON - FOR EXTERNAL USE ONLY
SHAKE WELL

Alulotion contains 5% ammoniated mercury colloidally dispersed in a base of aluminium hydroxide gel and kaolin. It is a greaseless, water-miscible lotion which is clean, convenient and efficacious for local treatment of various cutaneous infections. Clinical tests have proved that the use of Alulotion noticeably reduces healing time.

INDICATIONS: For local treatment of impetigo contagiosa, ecthyma, folliculitis and the secondary infections associated with eczema, seborrheic dermatitis and dermatitis due to irritants.

AL4M

ALULOTION

AMMONIATED MERCURY with KAOLIN

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

MANY DOCTORS

have adopted the wise policy of insuring everything with the

B. M. I.

British Medical Insurance Co. of Vic. Ltd.

Founded in the interests of the Medical Profession, surplus profits are devoted to the Medical Society of Victoria.

All Classes of Insurance Transacted:

FIRE—Homes, Cars, Furniture, Equipment.
BURGLARY—Contents of Homes, Instruments, Cars, Jewellery, Furs.
WORKERS' COMPENSATION. PERSONAL LUGGAGE. PERSONAL ACCIDENT. COMPULSORY THIRD PARTY. WAR DAMAGE.

DIRECTORATE OF THE B.M.I.

Dr. C. H. Mollison (Chairman), Dr. L. Latham, Dr. J. Newman Morris, Dr. F. Kingsley Norris, Mr. T. E. V. Hurley.

THE BRITISH MEDICAL INSURANCE CO. OF VIC. LTD.
389-395 Little Flinders Street, Melbourne, C.1.
'Phone: M 1871 (9 lines).

H. K. LEWIS & CO. LTD.

THE SYMPTOMATIC DIAGNOSIS AND TREATMENT OF GYNÆCOLOGICAL DISORDERS
By M. MOORE WHITE, M.D.Lond., M.B., B.S., F.R.C.S.Eng., M.R.C.O.G., with a Foreword by F. J. BROWNE, M.D.Aberd., D.Sc., F.R.C.P.Edin., F.R.C.O.G. *Second Edition.* Fully illustrated. Demy 8vo. 16s. net, postage 2d. (Just published.)

THE SULPHONAMIDES IN THEORY AND PRACTICE
By J. STEWART LAWRENCE, M.D.Ed., M.B., Ch.B., M.R.C.P., Demy 8vo. 9s. net, postage 7d. (Just published.)

ANATOMY AND PHYSIOLOGY FOR NURSES
By J. L. HAMILTON PATERSON, M.D.Lond., M.B., B.S., M.R.C.P., M.R.C.S. With 93 Illustrations. Demy 8vo. 9s. net, postage 7d. (Just published.)

A GUIDE TO HUMAN PARASITOLOGY
For Medical Practitioners
By D. B. BLACKLOCK, M.D.Edin., D.P.H.Lond., D.T.M.Liverp., and T. SOUTHWELL, D.Sc., Ph.D. *Fourth Edition.* With 2 Coloured Plates and 122 Text Illustrations. Royal 8vo. 15s. net, postage 9d.

LONDON: 136 GOWER STREET, W.C.1
Cablegrams: Publicavit, Westcent, London

ANDREW'S PHARMACEUTICAL PREPARATIONS

THIOURACIL

for therapy and in the pre-operative management of thyrotoxicosis, for patients with exophthalmic or adenomatous goitres, primary and secondary hyperthyroidism

Packed in bottles of 50 and 100 tablets of 0.05 grm.
" " " " 50 " " 0.2 "
Dosage in pre-operative management . . .
from 0.2 to 0.6 grm. a day.
Maintenance dosage . . .
from 0.05 to 0.2 grm. a day.

THIOUREA
in bottles of 100 tablets
of 0.25 grm.

Literature and further information provided on request from the manufacturers

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexoestrol
Sodium Desoxycholate
Stibophen
Stilboestrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.,
D.D.T.

SALINE THERAPY in relation to INEFFICIENT DEFÆCATION

Carefully controlled clinical tests conducted a few years ago in England established the value of a small regular dose of the simple mixture of salts in Kruschen Salts, in the prophylaxis and treatment of colon stasis and dyschezia. This mixture comprises:

SODIUM SULPHATE
SODIUM CHLORIDE
MAGNESIUM SULPHATE
POTASSIUM SULPHATE
POTASSIUM CHLORIDE

Summary of conclusions:

1. Authorities recognize the widespread prevalence of a condition known as dyschezia—inefficient defæcation, which may or may not be associated with frank constipation.
2. This condition arises largely as a result of present-day life—low residue diets, paucity of fluid intake, sedentary occupations and lack of bodily exercise.
3. Experimental and clinical work demonstrates clearly the importance of controlling the withdrawal of water from the fæces in the intestine.
4. Carefully-controlled clinical tests proved that a small *daily* dose (1·2 grammes—as much as will lie on a sixpence) of Kruschen Salts, brought up the water content of the fæces to normal and ensured regular, physiologically satisfactory emptying of the bowel.
5. This effect is due to the indiffusible ions released by Kruschen Salts in solution, which attract and retain sufficient water in the fæces by osmotic pressure.
6. In the treatment and prophylaxis of this ubiquitous condition, the regular daily dose of Kruschen Salts is the method of choice—its action accords with normal physiological processes; it contains no "drugs" and is neither injurious nor habit-forming.

KRUSCHEN SALTS

E. Griffiths Hughes Ltd. *Established 1756.*

GOLD MEDAL, International Congress of Medicine, 1913.

NOVOCAIN

Brand Ethocain
Hydrochloride.
THE ORIGINAL PREPARATION.
English Trade Mark No. 276477 (1905).

COCAINE-FREE Local Anæsthetic.

Despite the war, NOVOCAIN preparations are, and will continue to be, available in all forms, viz.:

Solutions in Ampoules, 1 oz. and 2 oz. Bottles, Stoppered or Rubber Capped. Tablets in various sizes, and Powder.

THE SAFEST AND MOST RELIABLE LOCAL ANÆSTHETIC.

Six to seven times less toxic than Cocaine.

Literature and Full Technique on Request.

Sold Under Agreement.

THE SACCHARIN CORPORATION, Limited
84 MALFORD GROVE, SNARESBROOK, LONDON, E.18
Telephone: WANSTEAD 2287.

Australian Agents: J. L. Brown & Co.,
123 William Street, Melbourne, C.1.

Made in Australia

SIMANITE

INSUFFLATION POWDER *and* VAGINAL SUPPOSITORIES

provide an effective treatment for vaginitis of any origin. SIMANITE products are non-irritant and non-toxic.

CARTER & CO. (AUST.) PTY. LTD.
267 Clarence Street, Sydney.
335 Flinders Lane, Melbourne.

Agents:

GRADWELL BROS.,
Brisbane.

W. RAMSAY PTY. LTD.,
Adelaide.

S. VAN DAL & CO.,
Perth.

ANAHÆMIN B.D.H.

1 c.c.
AHÆ
B.D.H.
TISH DRUG HOUS

The Active Hæmopoietic Fraction of Liver.

The exceptionally high anti-anæmic potency of Anahæmin B.D.H. is sometimes not realised by physicians who therefore tend to administer unnecessarily large doses or to administer Anahæmin at unnecessarily short intervals. In consequence a proportion of the material is wasted and the cost of treatment becomes excessive. Further, the patient is subjected to the administration of larger or more frequent injections than are required for effective treatment. It is important to realise, therefore, that even moderately severe cases of pernicious anæmia usually require an initial dose of not more than 2 c.c. followed by 1 c.c. every seven to ten days until the blood count is normal. Doses of 1 c.c. to 2 c.c. monthly provide adequate maintenance in most cases.

Thus, although the cost *per ampoule* of Anahæmin may seem to be high, the cost of treatment over a period is low.

Stocks of Anahæmin B.D.H. are held by leading pharmacists throughout the Commonwealth, and full particulars are obtainable from

THE BRITISH DRUG HOUSES (Australia, Pty.) LTD.

250 Pitt Street Sydney

Anan/Aus/462

For Surgical Antisepsis

Zephiran is a germicide of high bactericidal and bacteriostatic potency. In proper dilutions it is non-irritating and relatively non-toxic to tissue cells.

Zephiran possesses detergent, keratolytic and emulsifying properties, which favour penetration of tissue surfaces, hence removing dirt, skin fats and desquamating skin.

INDICATIONS

Zephiran is widely employed for skin and mucous membrane antisepsis—for pre-operative disinfection of skin, for vaginal instillation and irrigation, etc., and for the disinfection of hands and instruments.

HOW SUPPLIED

Zephiran is available as a standardised 10% aqueous solution called Zephiran Concentrate.

Bottles of 4 oz. and 40 oz. either
(A) aromatic and colourless
or
(B) blue-tinted and odourless

BAYER

'Zephiran'

ZEPHIRAN CONCENTRATE
ZEPHIRAN CONCENTRATE
BAYER PHARMA PTY. LTD.

BRAND OF ALKYLDIMETHYLBENZYLAMMONIUM CHLORIDES

BAYER PHARMA PTY. LTD., SYDNEY

Distributors: FASSETT & JOHNSON LTD., 36-40 Chalmers Street, Sydney

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 9, 1946. No. 6.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

The Sir Richard Stawell Oration—Medical Aspects of Red Cross in the Second World War, by J. Newman Morris 169
Acquired Resistance of Staphylococci to the Action of Penicillin, by E. A. North and R. Christie .. 176
Pleuropneumonia-like Organisms in Cases of Non-gonococcal Urethritis in Man and in Normal Female Genitalia, by W. I. B. Beveridge, A. D. Campbell and Patricia E. Lind 179
Early Results in a Short Series of Cases of Gunshot Wounds of the Abdomen, by Thomas F. Rose, Arthur Newson and Donald Watson 180
Lipomata of the Uterus, with Report of a Case, by J. D. Hicks 184
The Treatment of Inguinal Hernia, by Franklyn V. Stonham 185

REPORTS OF CASES—

Rupture of the Liver in the New-Born: Recovery after Blood Transfusion and Laparotomy, by Felix Arden, M.D., M.R.C.P. 187
Report of a Fatal Case of "Blast" Injury of the Spinal Cord, by D. Leslie 188

REVIEWS—

Psychiatry and Modern War 189
The Surgery of Peptic Ulceration 189
Synopsis of Surgery 190

NOTES ON BOOKS, CURRENT JOURNALS AND NEW APPLIANCES—

The Decoration of Hospitals 190

LEADING ARTICLES—

Overseas Travel for Australian Students 191

CURRENT COMMENT— Page.

The Prevention of Influenza 192
"The Stevens-Johnson Syndrome" 193
A New York Festschrift 193

ABSTRACTS FROM MEDICAL LITERATURE—

Surgery 194

MEDICAL SOCIETIES—

Obstetrical Society of the Women's Hospital, Melbourne 196

POST-GRADUATE WORK—

The New South Wales Post-Graduate Committee in Medicine 203
The Melbourne Permanent Post-Graduate Committee's Programme for March 203

CORRESPONDENCE—

The Central Hospital, Melbourne 203
NOMINATIONS AND ELECTIONS 203

NAVAL, MILITARY AND AIR FORCE—

Appointments 203

OBITUARY—

Guy Stuart L'Estrange 204
Sidney Solomon Rosebery 204
William Camac Wilkinson 204
NOTICE 204
MEDICAL APPOINTMENTS 204
BOOKS RECEIVED 204
DIARY FOR THE MONTH 204
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 204
EDITORIAL NOTICES 204

The Sir Richard Stawell Oration.[1]

MEDICAL ASPECTS OF RED CROSS IN THE SECOND WORLD WAR.

By J. NEWMAN MORRIS,
Melbourne.

THE Sir Richard Stawell Oration was established by its founder to preserve the memory of one of the greatest of Australian doctors, whose death occurred just ten years ago. Six of those years have seen the greatest world war of all time—the aftermath of the war in which Sir Richard Stawell rendered such distinguished service. In the war just ended he has been represented by his only son, Dr. John Stawell.

I was a student of Stawell's and that was a great privilege. After more than forty years I still remember the awed hush of expectancy and excitement when word went round the hospital that "Dicky's here". Then would follow a clinical demonstration, unequalled by any teacher I have ever seen at work. After I graduated, Stawell became to me the ideal physician, one to whom I could go in confidence, in consultation or in great relief for help in sickness in my own family. To those who had the honour and privilege to know Stawell as leader, colleague, doctor or friend, it is not necessary to stress the qualities of the man. He has become a tradition of that generation. For those who were denied that privilege, perhaps the picture of "the Chief" in "In Hospital", by William Ernest Henley, will serve in some degree:

> His brow spreads large and placid, and his eye
> Is deep and bright with steady looks that still,
> Soft lines of tranquil thought his face fulfil,
> His face at once benign and proud and shy.
> If envy scant, if ignorance deny
> His faultless patience, his unyielding will,
> Beautiful gentleness and splendid skill,
> Innumerable gratitudes reply.
> His wise, rare smile is sweet with certainties,
> And seems in all his patients to compel
> Such love and faith as failure cannot quell.
> We hold him for another Heracles,
> Battling with custom, prejudice, disease,
> As once the son of Zeus with Death and Hell.

May his influence and example long pervade and glorify the traditions of Victorian and Australian medicine!

When my fellow trustees did me the honour of asking me to deliver the tenth Sir Richard Stawell Oration, it was suggested that I should speak of the work of the Australian Red Cross Society in the late war. Stawell found time to take part in voluntary organizations related to the work of the medical profession, and it is not inappropriate that the war work of the largest voluntary organization in Australia should be the theme of a Stawell oration.

The second world war, which ended with the surrender of the Japanese forces on August 15, 1945, presented the Red Cross movement with even greater opportunities for service than the first world war. But its true functions have not been generally appreciated. Because of the manner of its origin eighty-one years ago, and of its close association with the work of the medical services, the Red Cross Society stands apart from philanthropic organizations whose services cover the welfare of fit and well troops. At the conclusion of the war of 1914 to 1918 the countries signing the League of Nations Covenant pledged themselves to encourage the formation of national Red Cross societies which would devote their energies towards the prevention of disease, the improvement of health and the mitigation of suffering, while maintaining their traditional purpose of organizing to give free voluntary aid to the sick and wounded in war. The International Red Cross Committee grants recognition only to such national societies as receive approval from their governments and are recognized as official auxiliaries to the medical services of the armed forces. The Australian Red Cross Society, founded on August 13, 1914, and granted a Royal Charter in 1941, conforms to these necessary conditions.

---

[1] Delivered at a meeting of the Victorian Branch of the British Medical Association on October 17, 1945. Received for publication January 18, 1946.

BASIS OF MEDICINE.

There is a close affinity between the purpose of medical practice and the objects of the Red Cross Society. It has been said that the primary objects of the medical profession are to prevent and cure disease, to ease pain and to save life. "Medicine", wrote Sir William Osler, "arose out of the primal sympathy of man with man, out of the desire to help those in sorrow and sickness", and "the basis of medicine is sympathy and the desire to help others, and whatever is done with this end must be called 'Medicine' ". The presence of this sympathy can be traced through recorded history. The Order of Saint John of Jerusalem organized aid for the sick and wounded from the twelfth century on. The first convention for the protection of wounded in battle was devised by the British physician General Sir John Pringle, during the War of the Austrian Succession in 1742. But Florence Nightingale and Henri Dunant are mainly responsible for the modern organization of voluntary aid in the care of war casualties.

DEFINITION OF FUNCTIONS.

No specific definition of the purposes of an official auxiliary has been laid down. These were developed on the experience of past wars and in consultation between army medical directorates and Red Cross officials. But as the Red Cross Society is recognized by governments as the official voluntary auxiliary of the medical services, it is clear that the functions and purposes of the Red Cross must conform to those of the services.

In "The Australian Army Medical Services in the 1914-1918 War", Colonel A. Graham Butler defines the army medical service as a highly complex social group, "at once a *technical military service*, exactly organized, established and trained for maintaining the army's strength for the achievement of victory; a scientifically equipped *social service*, cooperating with the various civil agencies in effecting the repair and reenablement of the war-damaged soldier, and a fully accredited humane agency for promoting and cooperating in the alleviation of suffering". This is a wide definition and seems to call for the assistance of such a voluntary auxiliary as the Red Cross, especially in relation to the two last-mentioned purposes. It can and should be said, in relation to the Second World War, that the medical services have in a most distinguished manner fulfilled all the purposes set out by Butler. Many of Stawell's students and successors have shared in this fine record, which would have greatly delighted him. How proud, for example, would he have been of Neil Fairley and his associates in their winning fight against tropical diseases, which contributed so greatly to the ultimate victory of the Allied forces! And with what admiration would he have learnt of the magnificent deeds of Coates, Brennan, Dunlop, Hunt and others in Japanese prison camps, or of Le Souef, Moore and many doctors in European prison camps! The service nurses share in the medical achievements of the war, and no greater epic of heroism exists than the courageous manner in which Australian nurses met their deaths in Sumatra at the hands of a murderous and inhuman foe. The reputation of our medical and nursing services stands deservedly high throughout the world. The Red Cross Society has been proud to assist them in every operational area as far forward as the regimental aid posts.

Butler listed the overseas activities of the society in the First World War, broadly as follows:

1. Provision of material: (*a*) extra equipment, stores, foodstuffs and so forth, for the use of the medical services; (*b*) extra comforts for the patients themselves, in particular tobacco; (*c*) means of transport, as ambulance wagons; (*d*) furnishings for convalescent homes and hostels; (*e*) other material.
2. Provision of facilities for reparative and vocational training and for recreation.
3. Visitation of patients in hospitals.
4. As an agency for the Australian Comforts Fund, as far as comforts for the medical services, especially the nursing service, were concerned.
5. Non-medical activities under the Geneva Convention and Hague agreements: (*a*) action in respect of prisoners of war; (*b*) the tracing of missing soldiers and communication with their relatives.

Except with reference to the Australian Comforts Fund, that description could be adopted in relation to the recent war. The society strictly limited its services to the sick and wounded and prisoners of war, although it provided group comforts for the nursing personnel. In accordance with its international obligations it also rendered aid to enemy prisoners of war who were under the care of Australian doctors. Many of the comforts issued were produced by the devoted labour of tens of thousands of workers amongst the three thousand branches of the society spread throughout the Commonwealth and its dependencies. The service was rendered by a field force consisting of five hundred men and women. Most of the men had served as combatants, whilst the women, known variously as hospital visitors and field hospital officers, were specially selected and trained. Each military hospital had attached to it Red Cross officers and other ranks, all incorporated in the army and subject to military law. In the mainland hospitals the service was supplemented by voluntary Red Cross unattached workers. This personal service was given also on hospital ships, ambulance trains and aerodromes.

ORGANIZATION.

Owing to the location in Melbourne of defence headquarters, the Red Cross Society has always had its central body in this city. It is controlled by a national council elected by State divisions of the society, together with some ex-officio and coopted members. The ex-officio members include the directors-general of the medical services of the armed forces. Until the outbreak of war, Major-General R. M. Downes, then Director-General Medical Services of the Army and the Royal Australian Air Force, was chairman, and he was succeeded by Dr. Victor Hurley, who later became Director-General Medical Services of the Royal Australian Air Force.

The first committee appointed at the outbreak of war was the Medical Services Committee, which included not only ex-officio medical members of the council, but the Principal Medical Officer of the Repatriation Department, the Commonwealth Director-General of Health and other medical men of prominence. It is now under the able guidance of Dr. W. W. S. Johnston as chairman and Dr. G. Robinson as Director. Similar committees exist in State divisions. There has been definite medical guidance in the affairs of the society.

PRE-WAR PREPARATIONS.

Soon after the Munich crisis in September, 1938, the International Red Cross Committee warned all national Red Cross societies to organize to a war-time level, and the Australian Red Cross Society appointed a planning committee under the leadership of Dr. Victor Hurley. A "Red Cross War Book" was prepared with the approval of the Director-General Medical Services of the army, and the plans were put into operation at the declaration of war. The chapters of the war book described the authority under which the society acts, both nationally and internationally, and dealt in detail with the various matters of interest in the society's activity, such as stores, personnel, transport, auxiliary hospitals, inquiry work and service to prisoners of war, while one chapter dealt with the details of hospital improvisation and blood transfusion.

Equipment in Service Hospitals.

Although much thought had been given to the war-time needs of this country, Australia was unprepared when hostilities commenced. This was true of the medical services, which had few whole-time officers and little or no hospital accommodation or equipment. In July, 1938, the Commonwealth Government set up a committee under the chairmanship of Major-General R. M. Downes to coordinate all matters relating to the medical needs of the country, military and civilian, in the event of war within Australia. The information acquired by that body indicated that a considerable amount of the needs must be met at first by a process of improvisation.

None of the excellent camp hospitals and magnificent base hospitals now existing had been erected. Little expenditure had been incurred to prepare for a national emergency that might not happen. Even in the early months of mobilization expenditure seemed to be niggardly in regard to the medical needs of the forces, and permission to acquire equipment was apt to be subject to long delays. It was then that the Red Cross Society, untrammelled by regulations, played a significant part in assisting the medical services.

The society commenced its war service without funds, but with a certain small amount of stores remaining from the war of 1914 to 1918. Public support was soon forthcoming, money donated amounting ultimately to more than £12,000,000. The Stores Department, on the basis of previous experience and in consultation with army medical officers, compiled a list of some eight hundred items of equipment, hospital furnishings, clothing and comforts considered suitable to supplement the official equipment scale for the care of sick and wounded. As military hospitals became organized, specific requests from individual medical officers became frequent. Official issue of items desired by them but outside the adopted scale was refused or delayed, and the Red Cross Society provided a more rapid channel of approach. It was soon found necessary, both by the Equipment Control Officer and by the society, to reach an understanding and to arrive at a formula.

Every establishment has an official scale of issues which is based upon experienced opinion as to needs. It is a minimum scale rather than a maximum scale, and, being official, is applied in strict accordance with regulations. The Red Cross Society is not responsible for providing basic equipment for hospitals. Only if the need is one of immediate urgency should supplies which should be issued by the authorities be sent to hospitals. The Red Cross Society should, it was determined, supplement the scale only when by its so doing increased efficiency of service could be given, or when urgency required official rules to be ignored, or when rapid replacements were essential owing to war casualties. It was laid down as a general principle that the funds of the society were not expended upon equipment which the State should provide as a necessity.

Experimental Equipment.

It is not always easy to amend an official scale nor to add to it. Improved instruments may be desired or are devised by medical officers, but no provision is made for experimental expenditure. Here the Red Cross Society was able to help. The most noticeable example was in mobile units, for blood transfusion, for surgical teams, for bacteriological work. The unit is constructed at the expense of the society. If it proves worthy of use, it may or may not become an official issue. Requests for such equipment always had official endorsement, and the blueprints were prepared and the construction supervised by service medical officers. For example, early in the war a mobile transfusion train was constructed at the request of the then Transfusion Officer, Colonel Ian Wood, and the Equipment Control Officer, Colonel Wallace Ross, both of whom supervised the construction. Intense interest was aroused in this first unit, which was shipped to the Middle East, but sad to relate, never arrived there. Four such units were later built.

Each suggestion was considered carefully and subjected to the tests laid down. Special orthopædic fracture apparatus was constructed for one hospital, and clinical photographic equipment for another, whilst plaster bandage machines, sterile water units and portable X-ray units were made and supplied in the early years of the war to the navy, army and air force medical establishments. Tools for repairing instruments were asked for and given, as no adequate official provision was made at the time, and this gift proved of great value in the Middle East and led to similar requests from other hospitals. A giant magnet was requested by an oculist of a general hospital. None was available, so an effective instrument was made in Australia, under the supervision of the oculist himself.

Other Equipment.

Libraries for the staffs of military medical units were not liberally allowed for in the early days, and the society took some part in meeting this need. This service was also aided by the British Medical Insurance Company of Victoria.

Care was taken, as far as possible, to refrain from catering for the special hobbies of individual officers, who desired to have at their disposal all the apparatus they had been accustomed to using in their civilian work, instead of adapting themselves to official equipment scales. Medical officers found that asking officially and getting things were generally quite unrelated happenings, so they applied to the Red Cross.

Ownership of Equipment.

The matter of ownership of equipment issued to hospitals by the society created some difficulty. After the previous war, some individual officers claimed the society's gifts for their own use, and the late Sir Neville Howse characterized this as a great abuse. It was decided to adopt the principle for the war that all equipment would be issued to the unit on loan, remaining the property of the society. The final result of this action, no doubt, will cause some problems when the goods are called in.

Comforts.

Red Cross stores in operational areas contained large reserve stocks of prepared dressings, rolls of old linen (favoured by nurses), rolls of gauze, leno for plaster work, and bandages. These were included on the basis of previous experience and were the product of organized teams, including former members of the Australian Army Nursing Service. There is evidence to prove that at times they were a very present help in time of trouble. But most of the hospital equipment was provided for the direct benefit of the patients themselves and was legitimately classed as "comforts". The men were frequently under the misconception that they were normal issues. The main idea was that the men must not suffer, and if the society could in any reasonable way lessen the suffering and aid in hastening recovery, it had a duty to do in which it must not fail. Many of the comforts could have been regarded as essential, but they just were not provided officially, although they were certainly valued on behalf of the patients by medical officers and nurses alike. The items were numerous, ranging from personal requisites to furniture and floor coverings.

It may be thought that all food requirements for patients in medical establishments would at all times be adequately catered for and available. Medical comforts and light diets in the early days of the war could, it was stated, be obtained if asked for, although not laid down on a definite scale as an issue. No service that the Red Cross Society provided was more useful than its "light diets". In every theatre of operations they were declared by hospital staffs to have proved essential, while in the New Guinea campaigns they were of life-saving value. In the last year of the war the society was officially requested to cease issuing these light foods, and medical officers and nurses were ordered not to use them, as official scales were adequate. But even then the society's stores were used. Florence Nightingale once said: "It is one thing to have goods in the quarter-master's store, but it is another matter to get them." Even the fresh eggs and fruit sent by the society via Royal Australian Air Force planes to various points in New Guinea failed to meet all the needs for these articles. The total list of articles made available by the society reads like the stock list of a general store.

SPECIAL REQUESTS FOR RED CROSS SERVICE.

While no special functions are laid down for the Australian Red Cross Society as an official auxiliary, its existence provides an organization to which the medical corps can direct specific requests for aid. Much of the war work done by the society followed requests of this nature, such as the establishment of convalescent homes, the employment of medical social workers, and the provision of blood serum and of a rehabilitation service in hospitals.

Convalescent Homes.

Dunant's improvised voluntary aid on the battlefield of Solferino included the utilization of a village church as a casualty hospital, and ever since then the establishment of auxiliary hospitals in war time has been a recognized objective in Red Cross work. This service is included in the Royal Charter of the Australian Red Cross Society. The British Red Cross War Organization in both world wars conducted many such institutions, although neither the Canadian nor the American society was called on in this regard. Towards the end of 1939, after a conference of deputy directors of medical services from the several military districts, the Director-General Medical Services requested the society to establish convalescent homes for the after-care of service patients. The first and largest convalescent home was opened in Victoria at "Stonnington" in May, 1940, with a bed capacity of 150. Thirty-two such homes were ultimately opened in Australia, as well as one at Port Moresby and one at Colombo, and a rest home for nurses at Jerusalem. A contract was let for the erection of a convalescent home for the Eighth Division in Malaya, and work had just started when the Japanese forces overran the Malay Peninsula.

Eight of the homes accommodated women only, one was for officers and one was devoted solely to the rehabilitation of psychiatric patients. The society was responsible for the selection and equipping of the buildings and for the staffing of the homes. Trained nurses were appointed in charge of whole-time or part-time Red Cross aids or voluntary aids. Amenities, handcraft materials and instruction, and apparatus for physical therapy were also supplied, subject to approval by the Deputy Director Medical Services. The Australian Army Medical Corps was responsible for medical care and records, admissions and discharges, and discipline. The convalescent homes were thus organized as part of the military hospital system; they were conducted by the Red Cross Society, but for all practical purposes were under the control of the Director-General Medical Services and his staff. For a great part of the war there were available 1,357 beds, supplementary to those in the various base hospitals. The stay of the men was usually relatively short, and the treatment given was essentially that applicable to recovery of medical and surgical patients no longer confined to bed. No training or "hardening up" was carried out as in a convalescent depot, and the type of care given, with its relaxation of the discipline of a regular service hospital, proved beneficial to the thousands of military patients who were accommodated, while the homes provided a useful reserve of beds for the medical officers.

Blood Transfusion Service.

Transfusion of blood and blood derivatives assumed large proportions in the resuscitation of battle casualties, and it has been assigned a high priority as a life-saving procedure. For ten years prior to the outbreak of war, a blood transfusion service was a Red Cross activity in Australia. Commencing in Melbourne in 1929, on the suggestion of the late Lieutenant-Colonel E. L. Cooper, then medical superintendent of the Royal Melbourne Hospital, it spread gradually to divisions in Western Australia, Queensland and Tasmania, and during the war, to New South Wales and South Australia. Recently a service has been established in the Northern Territory.

The pioneer service in Victoria, under the direction of Dr. Lucy Bryce, commenced by organizing blood donors for individual transfusions; the service also undertook testing and grouping of blood. In 1938 it set up a blood bank, the first in Australia. As the threat of war developed, an emergency service was instituted on the initiative of Dr. Bryce and Colonel Ian Wood. Early in 1940 pooled blood was obtained from these emergency donors and processed into liquid serum, for the first time in Australia, at the Commonwealth Serum Laboratories. Until the middle of 1942 all the serum sent from Australia to the Middle East and Malaya came from this source.

In July, 1942, Major-General F. A. Maguire and Colonel C. H. Kellaway requested the society to cooperate with the Australian Army Medical Corps on a national basis in developing a transfusion service to meet all military and civilian needs. At that time invasion of Australia was imminent. Combined army and Red Cross units were formed in each State, and an elaborate scheme of organization was developed to deal with any civilian casualties consequent upon enemy action. A large and active service was set up at the Sydney Hospital, which provided the greater part of the serum for service purposes. However, serum was produced also in Queensland and Western Australia, as well as in Victoria. Plants for drying serum were set up in Sydney and Adelaide, and for small-scale experimental work in Melbourne. Pooled serum, wet and dry, thus provided, has been available for civilian as well as for service needs, and has been supplied to the Royal Navy and the Royal Australian Navy, to the Allied forces and to merchant service vessels, as well as to New Zealand, Fiji, Samoa and the Flying Doctor service.

The Red Cross Blood Transfusion Service has endeavoured to meet all needs and to keep pace with progress, and other aspects may be summarized as follows.

1. Donors with high-titre serum (anti-A and anti-B) were selected for use in blood group tests. Serum from these donors, which is processed at the Commonwealth Serum Laboratories, was used for the testing of many thousands of members of the defence forces.

2. Panels of "Rh-negative" donors were established and suitable anti-Rh serum was provided. In a consultative capacity, especially in Victoria, New South Wales and Western Australia, the Red Cross service has been able to enlist the cooperation of obstetricians and pædiatricians, thus securing satisfactory supplies of serum for processing.

3. Special products, such as red cell suspensions and concentrated serum, have been supplied for therapeutic purposes on an experimental basis in recognized clinical schools.

4. Original investigations have been published from time to time in medical and scientific journals by Red Cross medical officers and technicians.

5. Individual donors are supplied to practitioners who prefer to take blood from donors immediately before use or to employ special methods.

6. From the latter end of 1942, whole blood, Group O, was sent by air transport from the Queensland and New South Wales services, in specially designed ice-boxes, for use in military hospitals, both Australian and Allied, in the South-West Pacific area.

7. Blood banks have been set up in civilian hospitals in many towns in Australia and suitable stocks of serum are maintained in many country hospitals. The Red Cross Transport Service has frequently been used to meet rapid emergency needs, both in cities and in the country. This has proved of special value in such disasters as the bushfires in Victoria in 1944.

8. In order to investigate the newer developments in transfusion work, the society sent Dr. Lucy Bryce and Miss M. Bick to the United States of America early this

year. Miss Bick is at present working in the laboratories of Professor Cohn, in Boston, on the technique of serum fractioning and the study of the increasing value of serum globulins.

The general coordination of these transfusion services and the formulation of national policy is vested in a National Blood Transfusion Committee within the Medical Services department of the society. The committee includes senior officers of the defence medical services, pathologists, and transfusion and refrigeration experts from all States of the Commonwealth. A technical subcommittee exists to deal in detail with, keep abreast of, and report on scientific and technical problems and developments. These committees meet several times each year.

The society has determined to continue for the benefit of civilians the widened basis of operations developed to meet war-time needs, provided financial support is forthcoming and the interest and cooperation of donors can be maintained. This latter factor is the essential basic consideration, and time only will tell whether this sacrifice of blood by tens of thousands of Australians, so readily available in periods of national emergency and danger, will be equally available for life-saving and preventive purposes in the quieter days of peace.

The service is a costly one to organize and maintain, and no charge is made by the Red Cross Society for any help it gives. Doctors who use the service freely have never been prominent in helping to keep it going or in obtaining donors. Blood transfusion has become an essential factor in meeting resuscitation and other needs. It is assuming greater importance in the prevention and treatment of some of the infectious diseases. It must be organized on a permanent basis, and it is thought that the Red Cross Society is the best body to continue the work. Already the Victorian Division, in cooperation with the Royal Melbourne Hospital, is building a Red Cross donor centre and associated laboratories, and similar expenditure is contemplated in other parts of Australia. This is being done in the hope that the wonderful voluntary service and the sustained devotion of donors, so freely offered to save the lives of the fighting forces, may be available to preserve these men, their wives and children, during the long years of civilian reconstruction.

The medical profession should be the most energetic helpers of the society in this life-saving enterprise. Probably also the society will be compelled to request a government subsidy to take care of financial aspects if the blood and serum are to continue to be supplied free of cost to the patient.

Rehabilitation of Disabled Service Personnel.

Towards the end of the war of 1914 to 1918 the then newly constituted Repatriation Commission requested the Red Cross Society to provide facilities for occupational therapy. The service then started was maintained in repatriation institutions in the years between the two world wars. Materials and workshops were provided, together with instructors, by means of which the men in hospitals, sanatoria and mental institutions learned the methods of basket-making, cabinet work and other craft work, not only as a diversion but as an aid to restoration of health.

During the Middle East campaign, at the request of the army, the Red Cross women hospital visitors commenced handcraft instruction which served to some extent as occupational therapy, under the direction of medical officers.

In March, 1941, the Adjutant-General asked the Red Cross to participate in rehabilitation work within Australia. The society was asked to act as agent for the Army Education Service, and as liaison between the medical officer and education service and between the patient and the education service, and also to provide handcrafts for relief of tedium. Medical social workers were appointed as liaison officers and to supervise and coordinate the handcraft work. Similar functions were also accepted on behalf of the Royal Australian Air Force Rehabilitation Section.

Although it was appreciated that, where hospital patients were concerned, medical social workers could suitably perform a liaison function for the education service, the desirability of the direct importance of medical social work as part of medical treatment was apparent from the outset, and the Directors-General of Medical Services of the Army and the Royal Australian Air Force considered this early in 1943. They decided that medical social work should be one of the facilities afforded by their medical directorates, believing that more flexibility could be achieved if such workers were not enlisted service personnel. Accordingly it was decided that they should be Red Cross personnel working under the commanding officers of hospitals. The Director-General Medical Services, Royal Australian Air Force, further expressed the view that Red Cross medical social workers could give continuity where medical officers wished to have a "follow-up" of patients after their discharge from hospital.

In July, 1943, an army instruction made Red Cross medical social workers directly responsible to the medical services and no longer required them to function as agents for the education service. At the same time Red Cross handcraft workers were made responsible to army occupational therapists. Instructions from the army and the Royal Australian Air Force gave Red Cross medical social work an official position in hospitals. Similar work was undertaken for the navy. This set-up allowed greater specialization in medical social case work under the medical officers' direction. In military hospitals, where matters that confront the civilian almoner (such as arranging for special diets or other matters often affected by the need for financial aid) do not arise, the patient as an individual becomes more isolated as the main subject of medical social work. Attention is then directed to problems of psychological adjustment to illness or disability, when the medical officer considers this will contribute to the patient's recovery and to securing the constructive acceptance of the patient's situation by his family. Perhaps for such reasons Red Cross medical social workers are most used in psychiatric cases and in those in which mental disturbance is associated with some other condition. In the obtaining of social histories at the medical officer's request the national set-up of the Red Cross service allows information to be easily obtained from other States when necessary. This is done on a considerable scale at one large psychiatric unit (114th Australian General Hospital). Medical social workers may also assist with post-discharge plans for those leaving the services and provide follow-up investigations under medical guidance. At large hospitals it has been found that rapid turnover in staff and patients makes attention to individual problems difficult.

At the end of 1943, it was apparent that there was a great need for some care to be given to service personnel discharged as medically unfit but not accepted for benefits from the Repatriation Commission; the policy of the society was changed to provide case work service for this class. Previously only those accepted by the commission had been within the scope of Red Cross service. Thus Red Cross social service is now available to all service members in hospital and discharged on medical grounds. For the latter, social service departments of the Red Cross are established in all capital cities.

Service in both the hospital and the post-discharge fields is carried out in cooperation with other agencies, it being recognized that the Red Cross Society is responsible for the sick and wounded and those discharged as medically unfit. Commonwealth departments are now beginning to develop a trained social worker staff, but as the supply of workers that are even now needed will not be available, close liaison will be necessary.

The society has accepted a proposal from the Director-General of Manpower for the seconding of Red Cross social workers for individual follow-up of selected disabled ex-service personnel at a stated period after their first placement through the Commonwealth Employment Service. The object is to prevent serious maladjustments which might prove difficult to eradicate, and also to provide the opportunity to explore individual needs as a basis for further development from that stage.

In November, 1944, "Gilbulla" Rehabilitation Farm was established by the society in New South Wales. This is a residential rehabilitation centre for men who, after medical treatment, have some residual difficulty, either organic or psychological, through which they are not yet fit to take up training or return to a civilian job. Cooperation with the Repatriation Commission and the Commonwealth Department of Social Services is maintained.

Beginning with a proposal from the army in 1943, that the society should help to meet the extreme shortage of trained workers by subsidizing students in medical social work, the Red Cross Society has developed a scholarship scheme in social service, through which 48 students have undertaken training. This number includes three senior workers who have been granted scholarships to the Mental Health Course of the University of London. As a further contribution to the development of what is a young profession in Australia, the society has agreed to provide for a period subsidies to the Universities of Sydney, Melbourne and Adelaide, to improve training facilities in social work.

In 1932 the Victorian Council of Social Training was formed. Sir Richard Stawell was its first chairman, and showed great interest in what was then a new form of training. When he retired he asked me to succeed him. Now this body is merged with the Board of Social Studies at the University of Melbourne. It is certain that Stawell would have been delighted with the progress of the organization which he so ably started and with the valuable contribution made by trained social workers during the war.

Handcraft Service.

The handcraft service was developed as a separate operation. In general hospitals in Australia, Red Cross activity in this regard comprised, under the scheme approved by the Adjutant-General and the Director-General Medical Services, assistance to the occupational therapists who were appointed by the forces, to the extent that medical officers may call upon Red Cross for assistance in doing everything possible to relieve the tedium of patients in hospital.

The organization of this service was placed in the hands of a well-trained director of handcrafts. She was responsible also for the teaching of Red Cross hospital officers, each of whom was required to undergo a fixed minimum period of training. Training centres were set up in each State with a central school in Melbourne. The director was required also to maintain a steady flow of materials to forward areas and base hospitals alike. Owing to the few suitably trained occupational therapists, some hospitals were without the service of these valuable officers, while in forward areas Red Cross officers were responsible only for providing diversional therapy. The absence of occupational therapy departments often led medical officers to rely on Red Cross workers to carry out prescribed remedial work. This development laid on the Red Cross Society the obligation to give to its field hospital officers the best possible training in handcraft work.

The development of the handcraft service during the war was proof of its value to patients in hospitals from base to forward areas. In the base areas it was guided by professional handcraft workers, aided by teams of voluntary workers. Its remedial value, apart from the relief of tedium, was soon apparent.

The standard of work required was decided by the need of patients and by medical advisers who knew what was best for each patient. Experience showed, for example, that a craft like weaving, with many fields to be explored, was far more valuable to a long-term patient than to a short-term patient, keeping him mentally alert as well as fully occupied. Leather work, with stimulus of new designs of varied articles, and leather plaiting could be carried on by the patient when he was discharged from hospital and returned to his unit located in some areas like the Northern Territory, where tedium and boredom were prevalent. The improvised work-bench was encouraged to utilize resources at hand (for instance, in North Queensland the lawyer vine was used for all types and sizes of baskets, and in New Guinea pearl shell or scrap duralumin was employed); this was preferable to the sending forward of quantities of scarce and expensive fancy materials, which would be out of reach of the patient when he was discharged.

The popularity of this scheme created difficulties, and it had to be controlled by being confined largely to men referred by medical officers or ward sisters. Many stories have been told of how patients have been working hard on some activity, yet the handcraft worker or field hospital officer has not known how to do the work herself. One patient could teach string knotting to a group, and gradually this would spread from ward to ward until many were so occupied. It is certainly not handcraft ability that is the most important attribute of the Red Cross officer, but initiative to develop an idea where she sees it—an idea not always her own. Far more benefit may be gained by the patient who has not only employed himself, but also is thinking of others. It was proved time and again that simply distributing materials was of little value. The advice and comment that went with the first job enabled the patient completing another to say: "I never thought I could do this."

The value of this stimulus to a bored patient's interest needs little emphasis and it is a service that needs for its application women, well trained and well selected, able to fit into the hospital atmosphere, and ready to follow medical guidance in achieving more rapid recovery for the patient. It is a service for which medical and nursing staffs, immersed in their all-absorbing duties, have not the time. There is no doubt that, carried out in the efficient way that characterized it, this service left a lasting impression on the men and women who were laid aside in service hospitals during the war.

The society employed 80 full-time handcraft workers and 363 part-time voluntary assistants in Australia. These figures do not include those hospital visitors or field hospital officers in charge of handcrafts in both divisional and forward areas, of whom there were more than 50 carrying out this service wherever hospitals were set up.

Psychiatric Problems.

Probably in no other war have the psychiatric problems of members of the armed forces received so much real attention from the battlefield to the period of return to civilian existence. Much has been written on this subject, some of it of first-class importance, some of it based on misconceptions and ignorance.

Early in the war some public concern was expressed at the apparent lack of treatment facilities in Australia for this class of patient, and the society was approached to do something about it. As a result the council offered the Director-General Medical Services any assistance in its power of which he might care to make use. One of the first results of this offer was the appointment by the Victorian Division of a trained psychiatric social worker at the Heidelberg Military Hospital. The appointment of a psychiatric sub-committee—Lieutenant-Colonel H. Maudsley and Major John Williams—was made to the National Medical Services Committee, whose advice and guidance were constantly sought and freely given. A Red Cross convalescent home at Kew, Victoria, with a bed capacity of 100, was set aside to accommodate patients referred from the psychiatric wards at Heidelberg, the society furnishing the home with every facility needed for the rehabilitation of the patients. The home "Rockingham" achieved successful results under skilled medical supervision.

Transport.

In some countries transport of wounded is mainly, sometimes entirely, a responsibilty of the Red Cross organization, a notable example being the United Kingdom.

where a large fleet of ambulances is maintained by the Red Cross Society under military direction. The Australian society laid its plans to render this service if this country was invaded. It was known that at least up to July, 1938, the army had only two ambulances, apart from some horse-drawn vehicles of ancient type, while the navy had one ambulance and part use of another. It was soon obvious that the society would not be expected to provide an ambulance service, and early in 1940 it was decided to present ambulances as gifts to the various medical services. Altogether 200 were presented through this Red Cross channel, many of them being shipped to the Middle East, where they were subsequently handed to the British Red Cross.

A considerable volume of transport service was rendered, however, in all States, in meeting convoys of wounded, sick and prisoners of war arriving by ship, aeroplane or ambulance train. Amenities not otherwise available were also placed on air ambulances at each landing place, while every hospital ship and ambulance train was accompanied by Red Cross representatives attached to the medical units in charge.

Medical Control of Red Cross Service to Prisoners of War.

The most widely known service rendered by the Red Cross Society in the late war was the provision of food parcels, invalid foods and medical supplies for prisoners of war. Where this help was able to be given fully, it was a valuable aid in maintaining health and morale and sometimes even life itself. The story gives point to the status of the Red Cross Society and the neutral International Red Cross Committee. The Prisoners of War Code, formulated by the International Red Cross Committee, and signed and ratified by most countries in 1929, has little reference to the Red Cross, whose only duty under the code is to establish an information bureau. There is a reference to undefined Red Cross welfare work, which must not be impeded, but the responsibility for caring for the basic needs of prisoners of war is placed on the captor nation, supervised by so-called "protecting powers".

British and American authorities fully carried out the obligations imposed on them in the care of enemy prisoners of war, but unfortunately, Germany, Italy, Japan and their allies failed to do so. Hence the vital need for Red Cross aid. Germany, and to a lesser extent Italy, permitted this aid to be given to a surprising extent, and it was carried out largely on a cooperative basis, by national Red Cross organizations, through the International Red Cross Committee. Shipping difficulties, distance and danger from enemy action were factors which caused the Australian Red Cross Society to pay to have food parcels packed by the Canadian Red Cross and to purchase other assistance from the British organization.

The least known aspect of this vital service is the close and expert medical supervision of the contents of the standard food parcels supplied by the Red Cross Society. This work was done by medical officers of the British War Office. Similar analyses were made in Canada and in the United States, and the procedure was closely followed by our own medical department. The nutritive value of the main basic commodities and their alternatives were estimated in terms of Calories, protein, calcium, iron, vitamins *A*, *B* and *C*, riboflavin and nicotinic acid. Calculations were made of the nutritive value of foods in each standard parcel, and the average value of each parcel was arrived at. From this was calculated the average value per week and per day. On figures supplied by the War Office the standard German and Italian prisoners of war ration was analysed. The fiures obtained, added to those obtained from the analysis of standard food parcels, gave the available food values per man per day, which were compared with optimum requirements. From these calculations shortages in various constituents were estimated as well as some excess values. It was possible to control by this means the amount of fortification necessary in various food commodities. Similar analyses of Japanese rations were made by the Ministry of Food, based on data supplied by the International Red Cross delegates. Compared with optimum requirements, there were, as might be expected, considerable deficiencies.

Immediately on the outbreak of war with Japan the Medical Service Committee of the Australian Red Cross Society, in anticipation of the capture of Australians, and in the false belief that the Japanese would permit the Red Cross service to operate as in Europe, devised a food parcel having regard to the basic national foods of Japan. This parcel was later accepted with slight modifications by the medical officers of the British War Office. The small amount of relief permitted subsequently by Japan is too well known.

Similar medical advice controlled the contents of invalid food parcels, which were accompanied by detailed directions as to their appropriate use. Medical and surgical equipment, drugs, dressings and special appliances not provided in sufficient quantities or variety by captor countries were dispatched through the International Red Cross Committee, largely on requisition sent by medical officers in prisoner-of-war camps.

Blinded prisoners were provided with appropriate equipment and instruction on the lines adopted at Saint Dunstan's Hospital, while a similar service was rendered to those who had become deaf. Textbooks were sent to medical officers, while the education service provided had definite medical value in prison camps.

The excellent results obtained in the maintenance of health amongst prisoners of war in Europe where Red Cross aid was available can be largely attributed to the close association of the medical profession in this service.

Although the Japanese authorities at the outset announced that they would observe the Geneva Convention, no such regular service was ever permitted. Large quantities of food parcels and medical supplies were prepared under close medical supervision, but very little of this ever reached the prison camps.

Education in Nutrition.

When, in 1942, food rationing was commenced in this country, the society felt that it should assist in order that the best use should be made of the more limited food supplies. Although Australia was never really short of food, there has always been too much malnutrition.

It had been urged by the National Health and Medical Research Council that a widespread national campaign should be initiated to ensure a complete and adequate supervision over the diet of the community, and that this provided important work for the Women's organizations throughout Australia. From every survey made it has been shown that varying degrees of malnutrition exist in Australia and that much ill health, both physical and mental, is due to the inadequacy of our diet. Bad dietary habits may be the result of economic hardship; but a great deal of the blame can be attributed to ignorance on the part of many persons as to food needs and food values.

The Nutrition Service of the Australian Red Cross Society was therefore inaugurated to assist the Commonwealth Government in the task of disseminating knowledge of the principles of nutrition to the Australian people. In an effort to educate men, women and children as to what constitutes a "balanced diet", the Australian Red Cross Society arranged for nutrition campaigns to be conducted in the various States of the Commonwealth. This work was commenced more than eighteen months ago, and since then the society has slowly enlarged its sphere of activities to meet the needs of the Australian community.

A Red Cross National Nutrition Committee was formed within the medical department. It included medical specialists and trained dietitians, nominated by their professional organization. Two trained dietitians were appointed to the staff at national headquarters. As they work in cooperation with the Commonwealth Department of Health and the State Nutrition Committee, their activities are confined to those spheres not being adequately dealt with by other authorities.

Elementary nutrition courses have been conducted in cities and in many country towns. To these, members of the public, Red Cross personnel and representatives from different women's organizations are invited. In addition, the dietitians visit schools, teachers' colleges, parents' associations, women's organizations and youth clubs, giving single talks on nutrition. Pamphlets, posters, charts and strip films have been prepared to assist the programme, and efforts are being made to arouse interest in nutrition problems affecting the health and welfare of the Australian people. For those unable to attend lectures, broadcast talks have been arranged, and from time to time articles are published in the city and country Press dealing with "food facts" with which all should be familiar.

Through these activities it has been possible to make contact with a large section of the public. However, the work is only in its infancy at present; but it is hoped to extend it considerably in the near future, as it is thought that by doing so the Red Cross will be performing a valuable service, particularly in the post-war years.

EDUCATION IN HOME MANAGEMENT.

The society has also sponsored a course of lectures in home management, as it is considered that the greatest contribution women can make to the peace and happiness of the post-war world is to foster the art of home-making. The primary object of the course is to stimulate the wives and relatives of returning men to prepare themselves to become better housewives and home-makers, so that the best possible conditions will be available for their menfolk after their long absence. Through the willing cooperation and help of the domestic science schools in Victoria, a series of ten lectures and demonstrations has been given in Melbourne and some country areas. The subjects dealt with have included cookery, laundry work, housewifery, budgeting, marketing and nutrition. It is hoped shortly to establish this project in New South Wales and Queensland and to enlarge upon it so as to include various other subjects which will prove useful to all home-makers, both men and women.

An interesting phase of this campaign of education has been the experiment being conducted at the Royal Melbourne Hospital by the Victorian Division on the suggestion of Dr. Ivan Maxwell. A qualified dietitian has been installed in quarters provided by the board of management, solely to give instruction in home food management to patients and their friends referred by medical and other officers. This dietitian has no relation to the dietetic treatment prescribed for patients.

OTHER ACTIVITIES.

Other activities were carried on during the war and are still being conducted. The limits of time and space debar more than a brief mention of some of them, and as the Chairman of the American Red Cross recently remarked, "medical and health problems touch virtually every aspect of Red Cross activities". The Red Cross Society is a permanent organization and two points form its basic principles—succour for all victims of war without distinction, and the struggle against human suffering in all its forms.

The service has been available to all civilian sufferers from the war—to merchant seamen, civilian internees, people evacuated to this country from enemy-occupied territories, and the inhabitants of devastated countries in Europe and Asia. While medical supplies, clothing, food and other commodities and financial aid were sent to the United Kingdom and on the Continent to France, Norway, Poland, Yugo-Slavia, Czechoslovakia, Russia and Albania, special aid was rendered to Greece and Crete and to countries liberated from the Japanese. Large relief shipments and specialist teams of relief workers were sent to the people of Greece, in recognition, not only of their great need, but of their kindness to Australian soldiers.

For the relief of liberated prisoners of war and internees in Asiatic and Pacific territories, many tons of relief goods have been sent. A relief ship was chartered and loaded with 4,500 tons of goods; it resembled a floating warehouse. These were the first supplies available in these areas other than the Philippines, and at the present moment the society's workers are distributing them in Singapore, Saigon, Hong-Kong, Shanghai and Borneo and in Australian territories.

Medical supplies have been sent to China, and requests are coming in even now—each day almost—for more and more aid, especially in Dutch islands and in French Indo-China.

Civilian needs within Australia during the war absorbed much of the society's attention. Disasters such as bushfires and epidemics, shortage of nursing staffs in hospitals, and assistance in tuberculosis clinics, in promoting mass radiography and in immunization schemes, have taxed the available service to the utmost, as did the now almost forgotten civil defence measures when invasion threatened this country.

Conclusion.

A sincere tribute is offered to the hundreds of thousands of Australians, mainly women, who by their sacrifice and work, mostly given anonymously, carried on so vigorously this vast constructive and practical organization of sympathy and aid to those who suffered during the war.

Although peace of a sort has come to this earth, much work in the field of social service remains yet to be done. The Red Cross is the name and emblem of a great labour of love and mutual aid, in which all nations have been brought together. It embodies the idea of brotherly help, systematic, truly neutral, remote from national, religious and social differences, voluntarily enlisted in the struggle against human suffering. It is inconceivable that such a united will to help in all times of need should be permitted to disintegrate because fighting has ceased. Recently a soldier wrote: "May the Red Cross go on for ever." It will so long as humanity needs it. The universal application of its spirit throughout the world surely would do more for permanent peace than the political systems. But Dr. Huber, the great President of the International Red Cross, has said:

> To see in the pacification of the world by the rule of justice the supreme goal of all politics and to work towards that goal with energy and confidence, does not mean that we should shut our eyes to the fact that recourse to violence has not yet been made impossible, human instincts being what they are, demoniac and nature bound still. This being so, we must still stand ready to help when the need arises so that in the midst of awful havoc, the Red Cross on the white field may continue to bear aloft the symbol of fraternity.

The Australian Red Cross Society will carry on and will value the continued and extending assistance of the medical profession.

ACQUIRED RESISTANCE OF STAPHYLOCOCCI TO THE ACTION OF PENICILLIN.

By E. A. NORTH and R. CHRISTIE,

From the Commonwealth Serum Laboratories, Melbourne.

SPINK, Hall and Ferris (1945) failed to find a strain of staphylococcus not previously exposed to penicillin that was not inhibited by one unit of penicillin per millilitre, although more than 100 strains were tested. This is in accord with our own findings (North and Christie, 1945), that whilst naturally occurring penicillin-resistant staphylococci are at the most rare, a large proportion of the strains isolated from wounds in patients undergoing prolonged penicillin treatment showed considerable resistance as judged by standard sensitivity tests. There was, however, no definite evidence to indicate whether the resistant strains were the direct descendants of sensitive organisms

TABLE I.

Characteristics of Staphylococci Isolated from Leg Wound of Patient W33.

Date Isolated.	Serial Number of Strain.	Coagulase Formation.	Fibrinolysis.	Hæmolysis.[1]	Pigment Formation.[2]	Mannitol Fermentation.[3]	Serological Typing.[4]	Penicillin Resistance.[5]
7.6.45	S948	+	+	α	Aureus ++++	+1	III–VI	0·6 unit
15.6.45	S962	+	+	α	Aureus ++++	+1	III–VI	2·5 units
21.6.45	S938	+	+	α	Aureus ++++	+1	III–VI	10 units

[1] Hæmolysis is recorded as observed on 5% sheep blood agar.

[2] Pigment is graded with regard to intensity ("Aureus ++++" indicates intense pigment formation).

[3] The "+" sign indicates fermentation, and the numeral the day on which fermentation is complete.

[4] The Roman numerals indicate the type sera which cause agglutination.

[5] Resistance is recorded as the highest concentration in units per millilitre of penicillin in broth in which growth is apparent (even if slight) after twenty-four hours.

already in the wounds or were the result of cross-infection, either with naturally resistant strains or with odd strains that had acquired resistance and had become disseminated through the wards.

In the course of further work (to be published) some penicillin-resistant staphylococci were encountered which with little reasonable doubt could be regarded as variants of sensitive parent organisms, which had developed their resistance to penicillin *in vivo*. The finding of such variants enabled us to compare the reactions, particularly in laboratory animals, of the variants which had developed resistance to penicillin *in vivo* with variants which had acquired resistance *in vitro*.

The observations recorded in this communication confirm the general conclusions reached by Spink, Hall and Ferris (1945) with regard to the difference between variants whose resistance has been developed *in vivo* and variants whose resistance has been developed *in vitro*. They also show that the former retain full pathogenicity as judged by animal experiments, and that the penicillin resistance demonstrated by tests *in vitro* can also be shown in tests in laboratory animals—that is, *in vivo*.

Materials and Methods.

Penicillin-Resistant Variants of Normally Sensitive Strain Developed in Vivo.

Three cultures, S948, S962 and S988, were isolated on the dates shown in Table I. This table also shows their various biological and metabolic characteristics. Serological typing was done by slide agglutination (Christie and Keogh, 1940), whilst tests for penicillin resistance were carried out as previously described (North and Christie, 1945). S962 and S988 are regarded as true penicillin-resistant variants of S948.

In the animal experiments to be described, the reactions of S988 were compared with those of S948.

Penicillin-Resistant Variants of Standard Sensitive Strain F.D.A. 209, Developed in Vitro.

Penicillin-resistant variants of standard sensitive strain F.D.A. 209 were developed *in vitro* by daily subculturing of strain F.D.A. 209 in increasing concentrations of penicillin in nutrient broth. As the strain developed increasing resistance, agar slopes were inoculated from the tube containing the highest concentration of penicillin in which growth occurred. Such cultures were preserved under paraffin for future reference and testing, and were designated F.D.A. 209/1, F.D.A. 209/10, and so on, up to F.D.A. 209/160, the denominator indicating the highest unitage of penicillin per millilitre of broth in which the variant would grow.

Mouse Pathogenicity Tests.

Mouse pathogenicity tests were carried out as previously described (North and Christie, 1945), except that a range of dosages was employed to find the actual killing effect of the strains compared. The dose was always made up to a volume of one millilitre with normal saline solution, and its strength was estimated by the use of Burroughs Wellcome standard opacity tubes.

Comparison of Results of Penicillin Therapy in Staphylococcal Infections in Mice with Sensitive (S948) and Resistant (S988) Strains.

The infecting dose was that used in our standard mouse pathogenicity test (4,000,000,000 organisms), and the penicillin dosage was based on the report of Warmer and Amluxen (1945), in which they found that it was necessary to give 200 units per gramme of body weight every one and a half hours to maintain a concentration of one unit per millilitre. Further details will be given when the actual experiment is being described.

Standard Biochemical Tests.

Tests for coagulase production, fibrinolysis, hæmolysis, pigment formation and penicillin sensitivity were carried out as described previously (North and Christie, 1945; Christie, North and Parkin, 1945).

Results.

Comparison of the pathogenicity for mice of strains S948 (penicillin-sensitive) and S988 (penicillin-resistant) shows (Table II) that their killing power is identical within the limits of experimental error. Further reference to Table I shows that this similarity is combined with only one observable difference—resistance to penicillin as tested *in vitro*.

TABLE II.

Effect on Mice of Living Cultures of Penicillin-Sensitive Staphylococcus, S948, and of Penicillin-Resistant Variant, S988.

Culture.	Number of Organisms. (Millions.)	Number of Mice.	Result After Twenty-four Hours.[1]
S948	4,000	5	+ + + + +
S948	2,000	5	+ + + + S
S948	1,000	5	+ + + + S
S948	500	5	S S S S S
S988	4,000	5	+ + + + +
S988	2,000	5	+ + + + +
S988	1,000	5	+ + S S S
S988	500	5	S S S S S

[1] The symbol "+" indicates death; "S" indicates survival of mouse.

Once the fact was established that S948 and S988 were equally lethal for mice, the ability or otherwise of penicillin to prevent death in mice was investigated. Four groups of mice, A, B, C and D, each consisting of ten animals of equal weight (20 grammes), were used. Groups A and C were left untreated, whilst the mice of groups B and D were given 4,000 units of penicillin intraperitoneally at 8.45 a.m. and again at 10.15 a.m. Mice of groups A and B were then infected with S948 organisms intraperitoneally, and mice of groups C and D with S988 organisms (penicillin-resistant variants). The order of infecting the mice was such that the penicillin-treated animals received the living staphylococci fifteen to twenty minutes after the second dose of penicillin. The mice in groups B and D received a further 17,000 units spread over three doses at intervals of three hours, the first dose being given one hour after the infection with staphylococci.

TABLE III.

Demonstration of Penicillin Resistance in Staphylococci by Mouse Inoculation.

Group of Mice.	Strain of Infecting Staphylococci.	Penicillin Resistance *in Vitro.*	Number of Organisms. (Millions.)	Total Units of Penicillin Administered.	Number of Mice.	Result.[1]
A	S948	0·6 unit[2]	4,000	Nil	10	+ + + + + + + + + +
B	S948	0·6 unit	4,000	25,000	10	S S S S S S S S S S
C	S988	10 units	4,000	Nil	10	+ + + + + + + + + +
D	S988	10 units	4,000	25,000	10	+ + + + + + + + + +

[1] The result was read twenty-four hours after the mice were infected intraperitoneally, and seventeen hours after groups B and D had their final doses of penicillin. The symbol "+" indicates death; "S" indicates survival of mouse.

[2] The standard penicillin-sensitive strain F.D.A. 209 used as a control when resistance was being estimated *in vitro* gave the same result as S948.

The penicillin solution used contained 25,000 units per millilitre, and each mouse treated received one millilitre in divided doses.

The result of this experiment (Table III) is similar to that of one recorded by Warmer and Amluxen (1945), in that penicillin saved the mice infected with a penicillin-sensitive strain, whilst similar treatment failed to protect mice against infection with a penicillin-resistant staphylococcus. Our experiment is of added interest, since the resistant staphylococcus is almost certainly a direct descendant of the sensitive strain S948.

The penicillin-resistant variant F.D.A. 209/160, developed *in vitro*, was found to differ considerably from the parent strain F.D.A. 209 in its biological and metabolic characteristics. It grew poorly on nutrient agar and the colonies were smaller than the usual staphylococcal colonies. Little pigment was formed, and some β hæmolysis was evident on sheep's blood and agar. Mannitol fermentation was only slightly slower, but the variant still produced coagulase, although not so rapidly as F.D.A. 209. On the other hand, in poorness of growth, reduced size of colonies and almost complete lack of opacity in colonies, it could not be said to resemble closely any strain—pathogen or non-pathogen—that we have isolated from living tissues.

On repeated subculture in nutrient broth of strain F.D.A./160, its characteristics reverted to those of the parent strain, including its sensitivity to penicillin. The same alteration in characteristics was shown by the less resistant variants F.D.A./1 and F.D.A./10. These changes did not run parallel with increased resistance to penicillin; they appeared to precede it.

The killing doses in mice of living cultures of F.D.A. 209 and its resistant variants, particularly F.D.A. 209/160, were investigated with the result shown in Table IV. It will be noticed that strain F.D.A. 209 kills within exactly the same range as S948 and S988 (see Tables II and IV), whilst F.D.A. 209/160 is almost completely avirulent. (Suspensions of killed organisms from non-pathogenic strains are lethal for mice in doses of 100,000,000,000.)

TABLE IV.

Fatal Dose for Mice of Living Culture of Standard Penicillin-Sensitive Strain F.D.A. 209 *and of Three Variants with Resistance to Penicillin developed* in Vitro.

Culture.	Infecting Dose. (Millions of Organisms.)	Number of Mice.	Result After Twenty-four Hours.[2]
F.D.A. 209[1]	3,000	5	+ + + + +
F.D.A. 209	2,000	5	+ + + + S
F.D.A. 209	1,000	5	+ + + + S
F.D.A 209	500	5	S S S S S
F.D.A. 209/160 ..	32,000	2	+ +
F.D.A. 209/160 ..	16,000	6	+ + S S S S
F.D.A. 209/160 ..	8,000	7	S S S S S S S
F.D.A. 209/160 ..	4,000	5	S S S S S
F.D.A. 209/10 ..	6,000	1	S
F.D.A. 209/10 ..	4,000	5	S S S S S
F.D.A. 209/1 ..	4,000	5	S S S S S

[1] For particulars of F.D.A. 209 and its variants, see text.

[2] Symbol "+" indicates death; "S" indicates survival of mouse.

The killing power of strain F.D.A. 209/10 was not tested in a higher dosage than 6,000,000,000, as many non-pathogenic strains cause mice to appear ill with this dosage. After injection of organisms F.D.A. 209/10 the mice remained perfectly well.

A rabbit was injected intravenously with one millilitre of a twenty-four hour broth culture of F.D.A. 209/160. On the day following the injection the rabbit looked perfectly well. An attempt to recover the organism from the blood was successful, and the staphylococcus was found to be still resistant to 160 units of penicillin per millilitre. Further attempts at blood culture failed, and the rabbit suffered no apparent ill effects.

As a further check on the validity of the results obtained in mice, 0·5 millilitre of a twenty-four hour broth culture of F.D.A. 209 was injected intravenously into a rabbit, which died within twenty hours. Another rabbit similarly dosed with a culture of F.D.A. 209/10 remained perfectly well.

It has been shown that a penicillin inhibitor can be extracted from staphylococci that have acquired resistance *in vivo* (Spink, Hall and Ferris, 1945), but not from resistant variants developed *in vitro*. By two methods, both differing from that referred to by Spink *et alii*, we have confirmed this.

Selected strains were grown overnight in broth, and penicillin was added in graded amounts to quantities of 10 millilitres of the sterile filtrates. The tubes were then inoculated with the standard sensitive strain, F.D.A. 209, and reincubated. Growth occurred in the two filtrates from resistant strains developed *in vivo*, when the penicillin concentration was as high as 2·5 units per millilitre. With the filtrates from the standard sensitive strain itself and from a resistant variant (F.D.A. 209/160) developed *in vitro*, the highest concentration of penicillin in which growth occurred was 1/32 unit per millilitre.

Two resistant strains developed *in vivo* and one developed *in vitro* were "spot inoculated" on the centre of nutrient agar plates containing 2·5 units of penicillin per millilitre and incubated overnight. A streak inoculum of the standard sensitive strain (F.D.A. 209) was then made across the medium, passing close to each central colony. On further incubation growth from the streak inoculum of the sensitive strain occurred near the colonies of the resistant strains developed *in vivo*. No growth occurred near the colony of the resistant variant (F.D.A. 209/160) developed *in vitro*.

Discussion.

Spink, Ferris and Vivino (1944) stated that "probably of considerable clinical importance is that an increased resistance to penicillin is accompanied by the development of strains which are more susceptible to the bactericidal action of whole blood, and possibly to the other defence mechanisms of the host". This conclusion appears to have been based mainly on experiments conducted on resistant variants developed *in vitro*, and Spink and his associates (1945) have recently modified this view. They now consider that the resistance to penicillin which has been developed by *in vitro* methods is only a temporary characteristic of the organisms, whilst resistance acquired *in vivo* as a result of therapy with penicillin appears to be a more permanently acquired property. They state that

Vitamin Therapy

Calvita

NICHOLAS PTY. LTD.
ETHICAL DIVISION

℞ Calvita.

In each tablet

Tricalc Phos. gr viiß (0·5gm)
Ferri Sulph gr 1/6 (10mg)
Vitamin B_1 333 I.U. (1mg)
Vitamin D 500 I.U.

Nicholas

In bottles of 25 and 100 tablets

A NICHOLAS ETHICAL PRODUCT

The test of a dietary supplement

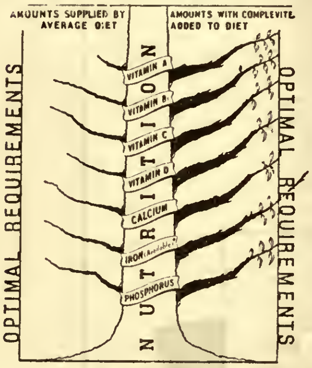
1 Does it contain the most important vitamins and minerals ? ✓

2 Are the quantities related to bodily requirements ? ✓

3 Is it in convenient dosage ? ✓

4 Is the cost such that the physician's directions will be followed ? ✓

5 Are additional supplements unnecessary ? ✓



The diagram illustrates the extent to which Complevite tablets meet the optimal requirements of a wide variety of protective and nutritional factors.

The adult daily dose provides :—Vitamin A 4,000 i.u., vitamin B_1 200 i.u., vitamin C 400 i.u., vitamin D 300 i.u., calcium 153 mg., iron 68 mg., phosphorus 250 mg., trace minerals 3 p.p.m

COMPLEVITE

PREGNANCY

Provide extra Protein, Vitamins and Minerals with BEMAX★

Bemax meets the need for supplying enough of the nutritional factors — in particular Vitamin B_1, iron and first-class protein.

Bemax is useful in the treatment of *hyperemesis gravidarum* and itself provides an appreciable body-building quota.

The Vitamins & Minerals in

★BEMAX

Approximate percentage of average daily requirement supplied by 1 oz. of Bemax :—

Vitamin B_1 (Aneurin)	50%	Vitamin B_6 (Pyridoxine) probably	100%
Vitamin B_2 (Riboflavin)	20%	Vitamin E (*a*-tocopherol)	100 + %
Nicotinic Acid (P.P. factor)	14%	Copper	25%
Iron (available)	25%		

Particulars concerning Complevite and Bemax from Fassett & Johnson, Ltd., 36/40, Chalmers St., Sydney, N.S.W.

Products of Vitamins Limited, London, England

CLEMENTS "Precision-Miniweight" Endotracheal Anæsthesia Apparatus

Made in Single Unit (as illustrated), or in two units for those Anæsthetists who prefer to have Blower Unit separate from Ether Vaporiser Unit.

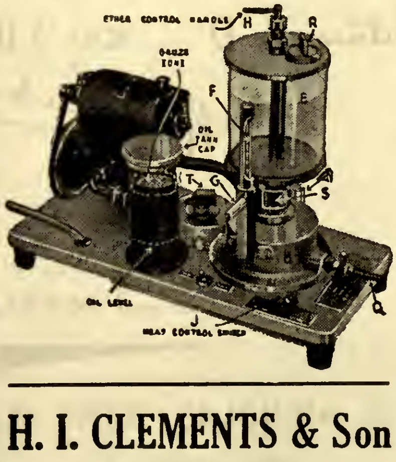
SALIENT POINTS: (1) Absolute Accuracy of Control of Ether Concentration at all times. (2) Safety in Use. (3) Quietness. (4) Long Working Life at Full Efficiency. (5) Very Light Weight—only 16 lbs.

(1) ACCURACY OF CONTROL OF ETHER CONCENTRATION.

Ether is fed by drop method controlled by lever "H" on top of ether reservoir "E". This system is to be preferred to the method of forcing air through or over main body of liquid ether, for then vapour concentration can neither be regulated nor guessed approximately, since liquid ether is subject to rigid laws of vapour tension, and this tension shows great variation at small changes of temperature; also, agitation of the ether through inadvertent shaking greatly increases strength of vapour. With the drop method as used in our "Precision-Miniweight" model, these difficulties do not arise, because **only sufficient ether is admitted to be immediately vaporised** in the electrically heated Vaporiser Chamber (B), temperature of which is **always maintained above boiling point of ether—94° F.**

(2) SAFETY.

Ether is contained in Tank (E), which is separated from Vaporiser (B), and only sufficient ether is allowed to drip through Sight Feed (S) into the air stream passing through Vaporiser Chamber (B), to maintain depth of anæsthesia required. With this design the air stream does not flow over or through main body of ether, **and it is impossible for liquid ether to pass to patient.** Liquid ether control and air supply control are by separate levers (H) and (T) respectively.



H. I. CLEMENTS & Son

ENGINEERS, ETC.

79 McLACHLAN AVENUE,
RUSHCUTTERS BAY, SYDNEY.

Postal Address, DARLINGHURST.
'Phone: FA 1478. Estb. 1908.

IMMEDIATE DELIVERY OF AIR ONLY TO PATIENT.

When Ether Drops are cut off by Lever (H), delivery of **air only takes place at once,** owing to the fact that temperature of the Vaporiser Chamber (B) is at all times kept **above boiling point of liquid ether—94° F.**—by the electrical heating element in its base, and the drops of ether falling from Sight Feed (S) into Vaporiser Chamber (B) **are instantly vaporised** and carried by the air stream to patient.

This principle provides a simple, reliable and **very accurate control of ether vapour concentration,** and ensures a beautifully smooth and even anæsthetic.

(3) & (4) QUIETNESS, LONG LIFE AND MINIMUM ATTENTION TO UPKEEP.

These desirable characteristics are obtained by the design of blower and its automatic oiling system, and by the **slow speed of both blower and electric motor.**

(5) VERY LIGHT WEIGHT.

16 lbs. This desirable characteristic, giving ease in portability, is attained by using light alloys wherever possible.

FINISH AND WORKMANSHIP.

The apparatus is made largely of polished aluminium alloy, beautifully finished. It is guaranteed against defects in material and workmanship.

the organisms which have become resistant to penicillin in the human body are as resistant to the bactericidal action of human blood as the penicillin-sensitive parent strains—in other words, they retain their full pathogenicity.

Our results tend to confirm the later views of Spink and his associates, especially with regard to the invasiveness of the strains which have developed resistance in the human body. In our experience it has not been easy to trace the direct development of resistance in a strain in infected war wounds. However, there is little room for doubt in the instance recorded by us, as strains serologically resembling S948, S962 and S988 are uncommon. So far there is little evidence that these resistant strains developed *in vivo* have been a major cause of failures with penicillin. However, Anderson, Howard and Rammelkamp (1944), reporting on the penicillin treatment of a series of patients suffering from chronic osteomyelitis, tested the sensitivity of the organisms before therapy; at intervals the organisms which persisted in the lesions were tested again. In two cases cultural examinations made a year after completion of penicilin therapy showed the organisms to be still resistant to penicillin.

Six resistant strains isolated from infected wounds treated with penicillin have been subcultured in this laboratory every day in nutrient broth for a period of thirty days. At the end of that time they showed the same resistance to penicillin as at the beginning, and they also showed all their former properties indicating full pathogenicity and invasiveness. One of these strains was three times subjected to animal passage, being given intravenously to a rabbit and recovered *post mortem*; after the third passage its resistance to penicillin as tested *in vitro* had not altered.

Warmer and Amluxen (1945), in experiments (already referred to) using mice, found that a penicillin-resistant hæmolytic staphylococcus proved to be resistant to concentrations of penicillin *in vivo* comparable with those *in vitro*. The strain which was isolated from an abscess following osteomyelitis treated with penicillin was found by laboratory tests to be resistant to concentrations of penicillin below 10 units per millilitre. The experiment (see Table III) carried out by us, and based on Warmer and Amluxen's report, completely confirmed their findings.

Evidence such as that contained in the reports of Spink *et alii* (1945), Anderson *et alii* (1944), Warmer and Amluxen (1945), together with our own experience, suggests that penicillin-resistant staphylococci may become a clinical problem of the future.

Conclusions.

1. Penicillin-resistant staphylococci developed *in vivo* are as highly pathogenic for laboratory animals as the sensitive parent organisms.
2. Resistant variants developed *in vitro* are not pathogenic for laboratory animals.
3. Staphylococci in which resistance has been developed in the human body following penicillin treatment kill mice in spite of the administration of large amounts of penicillin.

Bibliography.

D. G. Anderson, L. G. Howard and C. H. Rammelkamp: "Penicillin in the Treatment of Chronic Osteomyelitis. Report of 40 Cases", *Archives of Surgery*, Volume XLIX, October, 1944, page 245.

R. Christie and E. V. Keogh: "Physiological and Serological Characteristics of Staphylococci of Human Origin", *The Journal of Pathology and Bacteriology*, Volume LI, 1940, page 189.

R. Christie, E. A. North and B. J. Parkin: "Criteria of Pathogenicity in Staphylococci", 1945 (to be published).

E. A. North and R. Christie: "Observations on Sensitivity of Staphylococci to Penicillin", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, July 14, 1945, page 44.

W. W. Spink, U. Ferris and J. J. Vivino: "Antibacterial Effect of Whole Blood upon Strains of Staphylococci Sensitive and Resistant to Penicillin", *Proceedings of the Society of Experimental Biology and Medicine*, Volume LV, 1944, page 210.

W. W. Spink, W. H. Hall and U. Ferris: "Clinical Significance of Staphylococci with Natural or Acquired Resistance to the Sulphonamides and to Penicillin", *The Journal of the American Medical Association*, Volume CXXVIII, June 23, 1945, page 555.

H. Warmer and J. Amluxen: "Comparison of In Vitro and In Vivo Penicillin Resistance of a Strain of Hæmolytic Staphylococcus Aureus", *The Journal of Laboratory and Clinical Medicine*, Volume XXX, May, 1945, page 419.

PLEUROPNEUMONIA-LIKE ORGANISMS IN CASES OF NON-GONOCOCCAL URETHRITIS IN MAN AND IN NORMAL FEMALE GENITALIA.

By W. I. B. BEVERIDGE, A. D. CAMPBELL and
PATRICIA E. LIND,

From the Walter and Eliza Hall Institute of Research in Pathology and Medicine, and the Animal Health Research Laboratory, Council for Scientific and Industrial Research, Melbourne.

DURING the present war, about half of the cases of urethritis among men in the Australian armed services have been non-gonococcal. Most of these cases of so-called non-specific urethritis conform to the following fairly well-defined disease entity: the discharge is usually serous or milky and small in amount, little or no pain occurs on urination, there is no definite response to penicillin or sulphonamides, and in smears are found polymorphonuclear and epithelial cells. There is always a history of venereal contact, the incubation period being between seven and twenty-one days in two-thirds of our cases.

Complement Fixation Tests.

In 1940 Dienes reported the isolation of pleuropneumonia-like organisms from the cervix of five women, and later he and Smith (1942) isolated these organisms from 23 of 77 cervical swabs from women and from four men suffering from prostatitis. Klieneberger-Nobel (1945) cultivated pleuropneumonia-like organisms from the vagina of from 14% to 40% of women, some of whom were suffering from venereal disease and some of whom were apparently normal.

In 1943, Beveridge, seeking the cause of non-specific urethritis, isolated pleuropneumonia-like organisms from four of twenty-four patients. This led Dr. A. Neave Kingsbury (personal communication) to carry out complement fixation tests with serum from patients with venereal disease, using antigen prepared by one of us (A.D.C.) from the bovine pleuropneumonia organism. Kingsbury obtained a number of positive reactions, but there was no clear association between the results of the tests and the patient's clinical condition. We had a similar experience using antigen prepared from the bovine organism.

Antigen for complement fixation tests was prepared from two strains of pleuropneumonia-like organisms isolated from patients suffering from non-specific urethritis. The technique of the tests and the preparation of the antigen were as used for bovine contagious pleuropneumonia (Campbell and Turner, 1936; Campbell, 1938). In the first few batches of serum there was a striking correlation between the results of the tests and the clinical condition; of 62 specimens of serum from patients suffering from non-specific urethritis in New South Wales, 57 gave positive results, whereas only seven positive results were obtained from 98 specimens of serum from normal blood donors in Melbourne. However, subsequently only 22 positive results were obtained with 66 specimens of serum from patients suffering from non-specific urethritis in Victoria, and 44 positive results were obtained among 158 specimens of serum sent in for Wassermann testing. The majority of the last-mentioned subjects presumably were not suffering from non-specific urethritis.

Cultural Investigations.

Since publication of the earlier series of cultural studies by Beveridge mentioned above, Johnston and McEwin (1945) isolated two strains from cases of non-specific urethritis in South Australia. Urethral smears from each of these patients contained cytoplasmic inclusions, which these authors suggested might be manifestations of either the pleuropneumonia-like organism or a virus. Dr. S. E. Williams (personal communication) has observed similar inclusions in smears from patients suffering from non-specific urethritis. He also saw extracellular forms, and considered that those inside and outside the cells were pleuropneumonia-like organisms, as they closely resembled such organisms seen in smears from mouse lung.

We have recently culturally examined 70 urethral washings from patients suffering from non-specific urethritis by means of the semi-solid medium previously described (Beveridge, 1943), with the modification that only one tube was sown with each specimen and penicillin was added to a concentration of about 20 units per millilitre. Pleuropneumonia-like organisms were isolated from 14, and in most of these instances they were present in large numbers in the primary culture. Attempts at culture of the organisms from 67 normal male medical students yielded no positive results. Dr. Ella Macknight cooperated in the investigation by examining 11 women from whom men had contracted the disease. These women all had some erosion of the cervix, usualy of mild degree. Cultures of pleuropneumonia-like organisms were obtained from three of 11 swabs from the cervix of these women. Dr. Macknight also collected swabs from the cervix and vulva of 101 apparently normal women attending the gynæcological clinic of a public hospital. Positive cultures were obtained from 17 of these women. In three instances the organisms were grown from the vulva and not from the cervix, in two from the cervix and not from the vulva, and in seven from both; in the remaining five instances the region was unspecified. There were no obvious cultural differences between the strains from the normal women and those from women suffering from non-specific urethritis.

Investigation of Respiratory Infections.

Since there was such poor correlation between the results of the serological tests and the clinical condition of the genital tract, investigations were undertaken in an attempt to trace the origin of the positive serological reactions.

Eighteen specimens of serum from 72 patients suffering from febrile upper respiratory tract infections gave positive results to complement fixation tests against antigen made from pleuropneumonia-like organisms isolated from patients suffering from urethritis. In ten instances serum taken at the time of infection gave negative results, while that obtained from the same person during convalescence gave a positive response to complement fixation tests. However, in four instances the reverse occurred.

Seventeen specimens of serum from 24 patients with atypical pneumonia yielded positive results.

Attempts were made to grow pleuropneumonia-like organisms from material from four patients suffering from atypical pneumonia, from 57 washings from infected antra, and from 70 excised tonsils. No cultures were obtained.

Discussion.

The results of both cultural and serological studies have failed to clarify the significance of pleuropneumonia-like organisms in non-specific urethritis as seen in Australian servicemen.

For the present we must leave out of consideration the results of the complement fixation tests, which are confusing. The positive reactions may be non-specific or may be due to infection with pleuropneumonia-like organisms in some part of the body other than the urethra.

The main objections to the hypothesis that non-specific urethritis is principally or wholly due to infection with pleuropneumonia-like organisms are (i) the failure to obtain a growth of the organisms in 80% of cases and (ii) their presence in about 20% of normal women.

1. It was not possible, in the circumstances in which the work was done, to make repeated attempts at culture from the same subject. Pleuropneumonia-like organisms are relatively delicate, and it is easy to imagine circumstances in which they might fail to appear in culture although they were primarily responsible for the clinical condition. Such factors might account, at least to some extent, for the rather small proportion of positive results we obtained.

2. The existence of pleuropneumonia-like organisms in the genital tract of a considerable proportion of women showing no clinical evidence of infection cannot be regarded as evidence against the view that this group of organisms is responsible for non-specific urethritis in the male. It would be in line with general concepts of the ecology of bacteria of low potential pathogenicity—for example, pneumococci and meningococci in the throat—to find such a state of affairs. Non-specific urethritis in the male is often, perhaps usually, so trivial that it would be likely to escape attention in civil life.

Certainly no conclusion is justified on the present evidence; but all the facts available are nevertheless consistent with the tentative hypothesis that the disease is, in the majority of cases, the result of infection by pleuropneumonia-like organisms.

Summary.

Complement fixation tests against pleuropneumonia-like organisms isolated from urethritis produced positive reactions with a proportion of specimens of serum from persons suffering from various complaints, but there was no clear correlation with any clinical condition. These organisms were isolated in 20% of cases of non-specific urethritis among males and from 17% of swabs from the genital tract of normal women. None were detected in normal men. The interpretation of these results is discussed.

Acknowledgements.

These investigations were carried out in collaboration with the Australian Army and the Royal Australian Air Force. We are indebted to Major C. G. B. Colquhoun, to Squadron-Leader K. McLean, and to Lieutenant A. Stewart for selection of cases.

Bibliography.

W. I. B. Beveridge: "Isolation of Pleuropneumonia-Like Organisms from the Male Urethra", The Medical Journal of Australia, Volume II, 1943, page 279.

A. D. Campbell: "Contagious Bovine Pleuropneumonia: A Report on the Use of New Antigens for the Complement-Fixation and Agglutination Tests", *The Journal of the Council for Scientific and Industrial Research,* Volume II, 1938, page 112.

A. D. Campbell and A. W. Turner: "Studies on Contagious Pleuropneumonia of Cattle: II. A Complement Fixation Reaction for the Diagnosis of Contagious Bovine Pleuropneumonia", Council for Scientific and Industrial Research, Australia, Bulletin Number 97, 1936, page 11.

L. Dienes: "Cultivation of Pleuropneumonia-Like Organisms from Female Genital Organs", *Proceedings of the Society for Experimental Biology and Medicine,* Volume XLIV, 1940, page 468.

L. Dienes and W. E. Smith: "Relationship of Pleuropneumonia-Like Organisms to Infections of the Human Genital Tract", *Proceedings of the Society for Experimental Biology and Medicine,* Volume L, 1942, page 99.

G. A. W. Johnston and J. McEwin: "Non-Gonococcal Urethritis: Considerations of Ætiology; Findings in Two Cases", The Medical Journal of Australia, Volume I, 1945, page 369.

E. Klieneberger-Nobel: "Pleuropneumonia-Like Organisms in the Human Vagina", *The Lancet,* Volume II, July 14, 1945, page 46.

EARLY RESULTS IN A SHORT SERIES OF CASES OF GUNSHOT WOUNDS OF THE ABDOMEN.

By Thomas F. Rose,
Major, Australian Army Medical Corps,

Arthur Newson,
Major, Australian Army Medical Corps,

and

Donald Watson,
Major, Australian Army Medical Corps.

It is the purpose of this communication to present the early results in 27 cases of gunshot wounds of the abdomen sustained in a recent campaign in the South-West Pacific Area. These patients were treated in a forward surgical unit attached to a field ambulance, the time lag between receipt of the wound and operation averaging eight hours (varying from four to sixteen hours). Rifle bullets were the cause of the wound in eight instances, machine-gun bullets in three, fragments of mortar bombs in six, fragments of high explosives in five, fragments of grenades in three and fragments of landmines in two.

Eighteen patients had bowel perforations, whereas nine had involvement of solid viscera only—seven had involvement of the liver, and one had involvement of the spleen and one of the kidney. There were two abdomino-thoracic wounds in the former group—one on the right side involving the liver, duodenum and jejunum, and one on the left involving the descending colon—and three in the latter group, two involving the liver and one the spleen. The abdominal lesion was the major in these cases, the chest injury being simply a perforation of the lower lobe of the lung associated with a hæmopneumothorax. In one instance the chest wound was sucking in character.

Seven patients had associated wounds, four having multiple wounds of the extremities, one a sucking chest wound, one a pulmonary and abdominal blast effect, and one a penetrating brain wound.

RESUSCITATION.

Blood loss is the predominating feature in abdominal wounds, because of the extensive hæmorrhage into the peritoneal cavity and into the mesenteric and retroperitoneal tissues, apart from that due to any associated injuries. The subsequent circulatory deficiency causes anoxia of vital organs, which rapidly leads to an irreversible state of decompensated shock(4) unless early and rapid transfusions of blood are given.

Replacement therapy with stored or fresh group O blood was accordingly commenced immediately on the patient's arrival, whether he appeared to require it or not. Each patient received an average of four litres, usually two before, one during and one immediately after operation. Since the best results are achieved by rapid transfusions of whole blood and by early operation, the first two litres were given at the rate of fifteen minutes each or even faster if this was considered necessary. Ogilvie(11) points out that there is no limit to the amount or rate of transfusions in cases of severe blood loss, and in this series no untoward effects were seen from this quick, massive form of transfusion.

As a consequence, those patients who required abdominal exploration were fit for operation on an average one hour after the commencement of resuscitation. However, one patient with extensive abdominal injuries, who appeared to be adequately resuscitated with three litres of blood, died during operation eight hours after receipt of the wound, and another with a badly shattered liver died six hours after receipt of the wound whilst being resuscitated.

DIAGNOSIS AND OPERATIVE TECHNIQUE.

Diagnosis and operative technique have been discussed in numerous articles, more especially by Gordon Gordon-Taylor and W. H. Ogilvie, and do not need recapitulation here.

Twenty-three patients, including three with abdomino-thoracic wounds, required abdominal exploration, whilst two with simple perforating abdomino-thoracic wounds involving the liver and lung and one with a perforating wound of the left kidney responded to conservative measures. The chest lesions in the cases of abdomino-thoracic wound required only suture of a sucking wound in one case and repeated aspiration of a hæmothorax with penicillin instillation in four cases. These last patients had an expanded lung and a dry pleural cavity within ten days.

Tetanus toxoid and gas-gangrene antiserum were given to all patients.

AFTER-TREATMENT.

All patients who required operation had the stomach drained by a Ryle's tube until peristalsis was audible, usually on about the fourth day. During this time a daily amount of four litres of fluid, mostly serum to help supply protein, was given intravenously to ensure a daily excretion of 1,200 to 1,500 millilitres of urine and to make up loss of fluid by sweating. Once the Ryle's tube was removed, intravenous infusions gave place to feeding by mouth.

Blood hæmoglobin estimations and red cell counts were performed every third day, and if the level of hæmoglobin fell below 80%, further transfusions were given to correct the anæmia.

PENICILLIN.

Penicillin is most valuable in gunshot wounds of the abdomen.(6) Its purpose is twofold—firstly to prevent or localize infection in the parietes and any associated wounds, and secondly, to prevent or localize peritonitis, as it is now known that streptococci and staphylococci are contaminants of the peritoneum in these cases.(1)

Intramuscular penicillin therapy was commenced immediately on the patient's arrival, amounts of 15,000 units being given every three hours. The average amount given was 720,000 units, though it was much higher when other injuries were present.

Penicillin, in the form of penicillin-sulphanilamide powder, was used locally in the abdominal wall and associated wounds, but it was not used in the peritoneal cavity.

CONVALESCENCE.

All patients held in the forward unit were fit for evacuation usually two or three weeks after operation. Evacuation was by a sea trip of sixty miles, and as it was noticed that "abdominal" patients were liable to seasickness, this trip was always postponed if the seas were rough. A sudden storm at sea made one patient seasick, and as a result he almost died from an attack of acute confusional insanity lasting fourteen days.

RESULTS.

Eight of the nine patients with solid viscera injuries only recovered, and nine of the eighteen patients with bowel perforation recovered. Four of the five patients with abdomino-thoracic wounds included in the above figures survived.

Recoveries.

The patients who recovered are divided into two groups, (i) those with solid viscera injuries only and (ii) those with bowel perforations.

Solid Viscera Injuries Only (Eight Cases).

Six patients had an uneventful convalescence. Three of these had sustained perforating abdomino-thoracic wounds, two on the right side with liver perforations which did not require operation, and one on the left with a ruptured spleen requiring splenectomy. In two cases, a large foreign body lodged superficially in the liver and was removed at operation; one of these patients had a sucking chest wound in addition. One patient had a perforating wound of the left kidney which did not require operation. An excretion pyelogram three weeks later revealed a normal kidney.

Two patients had post-operative complications. One, who had a large foreign body removed from the liver, developed a superficial wound infection due to a penicillin-sensitive *Staphylococcus aureus* and *Bacillus proteus*; this rapidly yielded to treatment. The other had a badly damaged liver due to a rifle bullet's traversing it from side to side. Three pieces of liver lying free in the abdominal cavity were removed and the abdomen was drained. This patient developed atelectasis of the lower lobe of the right lung, and a biliary fistula through both the drainage and laparotomy wounds lasting twenty-seven days. A ventral hernia developed in the last-mentioned wound and was repaired five weeks later.

Three months after receipt of the wound, six patients were back in their unit doing the same work as previously. Two months after receipt of the wound another was in a convalescent depot, and another was still in hospital convalescing from a ventral hernia repair.

Comment.—None of the patients with liver wounds became jaundiced, and none developed an infection of the liver, at least not during the follow-up period. It is possible, of course, for liver infections to occur months after receipt of a wound, so that the prognosis must be guarded.(6) This favourable outcome may be due in great part to penicillin and also to the removal of all approachable foreign bodies. No patient developed choleperitoneum, but one had a biliary fistula which probably prevented its occurrence. It is wise to establish drainage in all cases of severe liver injury as a precaution against this complication.

Bowel Perforations (Nine Cases).

Five patients had an uneventful convalescence. The first had a perforated liver and a large tear in the upper part of the jejunum. The second had four jejunal perforations and a large retroperitoneal hæmorrhage. The third had an abdomino-thoracic wound with a perforated lung and two small perforations of the descending colon, which were sutured. The fourth had a small perforation of the ascending colon, which was sutured, and a large tear in the transverse colon, which was exteriorized as a loop colostomy, and a perforated liver.

Three months after receipt of the wound the first three patients had for a month been back in their unit doing their usual work. The fourth was discharged from the army back to his civil occupation (clerk). The fifth was in hospital two months after receipt of his wound, about to have his colostomy closed.

The four remaining patients had post-operative complications, two due to pulmonary emboli and two due to infection.

The pulmonary emboli involved the lower lobe of the right lung in both patients. The first, who had a tangential tear of the greater curvature of the stomach and a large tear of the mesenteric border of the first jejunal loop involving the mesentery, suffered a single embolus on the eighteenth day, from which he made an uneventful recovery. The second, who had three jejunal perforations and a badly lacerated mesentery,[1] suffered an embolus on the fourth and again on the fourteenth day. Recovery was uneventful, and two months later he was well and in a convalescent depot.

Both of these patients had severe mesenteric damage, for which ligature of divided jejunal vessels was necessary. Such damage is a frequent cause of pulmonary emboli and a common cause of death in cases of gunshot wound of the abdomen.

In two cases intraperitoneal infection developed.

The first patient, a native, sustained seven jejunal tears and a badly lacerated mesentery. Suture was performed six hours after receipt of the wound, but the foreign body was not found. Paralytic ileus developed and caused a rupture of the abdomen on the fifth day; the abdomen was successfully sutured. On the tenth day, a pelvic abscess (*Bacterium coli*) was drained through the rectum. When examined three months later, the patient was back on the "carrier line".

The second patient had two ileal perforations and widespread mesenteric and retroperitoneal hæmorrhage. He was not examined until sixteen hours after receipt of the wound, when early peritonitis was already present. A pelvic abscess, from which a penicillin-sensitive hæmolytic streptococcus was isolated, developed on the eighth day and was drained through the wound, which became infected by the same organism. A ventral hernia developed, which was repaired two months later. Two months later still, the patient was well in a convalescent depot.

This last patient shows the value of penicillin in peritoneal infection. Though its use was commenced too late to prevent a streptococcal infection, penicillin undoubtedly localized it.

Deaths (Ten Cases).

Nine patients with bowel perforations and one with a shattered liver died. Full autopsies were performed, but there were no facilities for microscopic examination of the organs.

The results in cases of gunshot wound of the abdomen depend largely on circumstances beyond the surgeon's control. A series of cases in which the majority of wounds are due to high explosives or bombs will have a greater mortality rate than one in which rifle bullets are the cause of the wounds, especially if associated injuries are present as well. The earlier patients reach the surgeon, the higher will be the proportion of seriously injured patients received and hence the higher the mortality rate.(9) Delay in receiving patients brings peritonitis, but it eliminates the worst cases;(10) for instance, Rohlf and Snyder(12) operated on their patients on an average eighteen hours after receipt of the wound, and only 20 deaths occurred in 98 cases.

Irreversible Shock Due to Anoxia of Vital Organs.

The cause of death in these severe cases is anoxia of vital organs due to the deficient circulation resulting from blood loss. Though blood transfusions have enabled men to survive injuries which would have been fatal in the last war, nevertheless there is still a small proportion of cases in which adequate resuscitation is without avail, because an irreversible state of shock exists, probably due to irreparable damage to cells of the liver, brain, adrenals, bowels and kidneys.(3)(4)

This state may cause death shortly after receipt of the wound, as in three cases in this series. The first patient died whilst being resuscitated from a badly shattered liver. The second, who had an abdomino-thoracic wound with gross involvement of lung, diaphragm and liver, a perforation of the duodenum and eight perforations of the jejunum, died during operation eight hours after receipt of the wound, having apparently been adequately resuscitated. The third patient had a shattered left sacro-iliac joint, a torn internal iliac vein, a perforated rectum and six jejunal perforations. Hæmorrhage was controlled by packing, the perforations of the jejunum and rectum were sutured and a proximal colostomy was performed. In spite of a transfusion of five litres of blood, commenced eight hours after receipt of the wound, the patient died twenty-four hours later. During this time he was rational and passed a litre of normal urine.

Traumatic Uræmia.

Should the kidneys be the chief organs affected by anoxia, the syndrome of traumatic uræmia occurs.(2)(12) In this, anoxia causes irreversible changes in the kidneys, the tubules being mainly affected as in the "crush syndrome". It may occur in any severe injury, and does not require a crush injury or gross muscle damage for its appearance.(5) No myohæmoglobin is excreted, and pigmented casts are absent from the urine.

Clinically the patient responds to resuscitation sufficiently to stand operation and appears to do well for a few days. Gradually, however, a uræmic state develops, with vomiting, rising blood urea level and diminishing urinary excretion, until finally anuria supervenes and the patient dies in coma about the eighth day. Albumin, blood and casts are found in the urine.

Two patients in this series died of traumatic uræmic. They showed no evidence of transfusion incompatibility, blackwater fever or "sulphanilamide kidney". (Both had penicillin-sulphanilamide powder insufflated into the parietal wounds, but no sulphonamide was administered systemically.) Unfortunately, there were no facilities for blood urea estimations. Autopsy in both instances disclosed that all wounds were healing well and there was no evidence of infection. All organs, including the kidneys, appeared to be grossly normal.

One patient was hit by multiple mortar fragments, which caused severe damage to the abdominal wall with evisceration of the stomach, small bowel and transverse colon. There was a large tear in the greater curvature of the stomach, through which a recent meal had escaped into the lesser sac and the great omentum. There were five holes in the jejunum, and the right side of the colon was in ribbons. The lower pole of the right kidney was lacerated, and much retroperitoneal hæmorrhage had occurred.

Resuscitation was commenced four hours after receipt of the wound, and an hour and a half later the parietal wound was excised, the stomach and small bowel perforations were sutured, the omentum was resected and a right hemi-

---

[1] It may be noted, in passing, that a missile may cause tangential wounds of the bowel, so that an unequal number of perforations is not uncommon.

PRIODAX
TABLETS

A New Contrast Medium for Cholecystography

Simplicity of Administration
Better Pictures
Minimal Side Actions
Greater Diagnostic Accuracy

PRIODAX is not related to phenolphthalein; and because of its unique chemical composition it rarely produces vomiting. Excretion of most of the compound by the kidney reduces the possibility of diarrhea.

Literature on request

X-RAY FILMS and PRECIOUS TIME

are vital to-day to the busy Radiologist

Use

PRIODAX

and save both

Made by the
SCHERING CORPORATION
Bloomfield, N.J.

Sole Distributors for Australia
SCHERING PTY. LTD.
SYDNEY, N.S.W.

A Statement of Fact —

Extract from "The Medical Journal of Australia": "Samples of Tenax Soap have been submitted to a careful investigation by our Analyst. He carried out a series of investigations with a 24-hour broth culture of Bacillus typhosus . . .

"Our Analyst expressed the opinion that it is probable that Tenax kills the bacilli in less than 30 seconds in a 10% Emulsion.

"We may thus conclude that Tenax is a satisfactory Germicidal Soap which may be recommended with confidence."

TENAX SOAP

A PRODUCT OF AUSTRALIAN SOAPS LTD.

WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

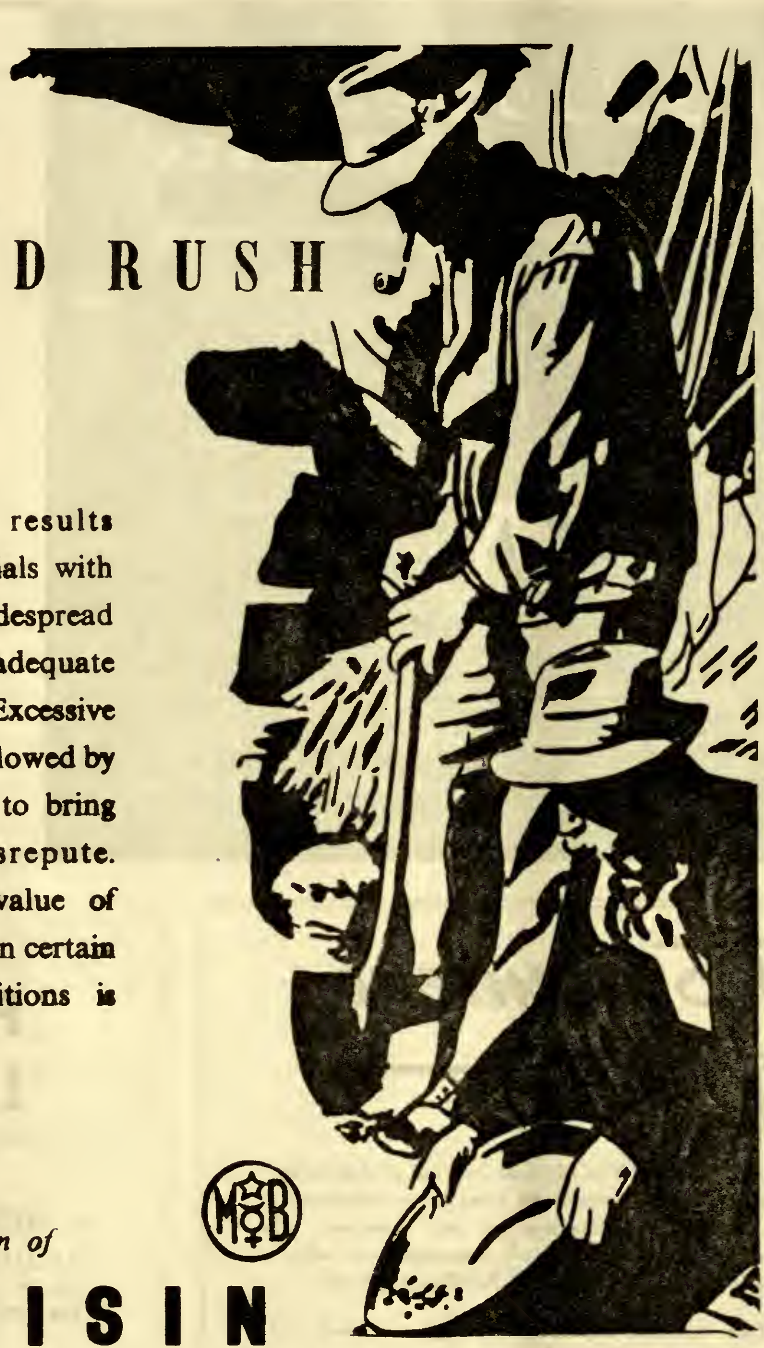
For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada
HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada
have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

THE GOLD RUSH



THE encouraging results obtained in early trials with gold therapy led to its widespread use, frequently without adequate precautions being taken. Excessive dosage was frequently followed by toxic reactions tending to bring the treatment into disrepute. Today, however, the value of small quantities of gold in certain chronic infective conditions is universally recognised.

The intramuscular injection of

MYOCRISIN

TRADE MARK

a British-made gold salt has proved the most successful treatment for

RHEUMATOID ARTHRITIS

Ampoules of 0.01 *gm.,* 0.02 *gm.,* 0.05 *gm., and* 0.10 *gm.*

MAY & BAKER (AUSTRALIA) PTY. LTD., 5 PHILLIP STREET, SYDNEY

colectomy was performed. The kidney did not require surgical intervention.

The patient did well at first, but he became drowsy on the fifth day and died in coma on the eighth day. His blood pressure rose to 150 millimetres of mercury, systolic, and 100 millimetres, diastolic, on the fifth day, but slowly dropped to normal.

In the first twenty-four hours this patient received six litres of blood (including that used for resuscitation) and two litres of serum. Thereafter he had four litres of serum per day. (In such cases of renal damage, large quantities of saline solution given intravenously will do no good—in fact, they only dilute the blood and tissue fluids.(8)) He passed 800 millilitres of urine in the first twenty-four hours, a daily average of 1,200 millilitres in the next five days, 500 millilitres on the sixth day, 100 millilitres on the seventh day, and none on the day of his death. Hæmaturia was present from the damaged kidney from the first, but twenty-six hours after operation, epithelial, granular, hyaline and blood casts appeared and were present in all specimens.

Another patient was hit by a burst of machine-gun bullets, one of which caused four perforations of the terminal portion of the ileum and the others widespread muscle damage of both legs, thighs and buttocks. Resuscitation was commenced seven hours after receipt of the wound, and an hour later his wounds were excised and the bowel was repaired. He did well until the fourth day, when he became drowsy, and he died in coma on the eighth day. His blood pressure always remained at about 110 millimetres of mercury, systolic, and 80 millimetres, diastolic.

He received four litres of blood and two of serum in the first twenty-four hours, and then four litres of serum per day. He passed an average of 1,200 millilitres of urine per day until the sixth day, when he passed only 200 millilitres. On the seventh and eighth days he passed no urine at all. Albumin and epithelial, granular, hyaline casts and blood appeared in the urine sixteen hours after operation, and were thereafter present in every specimen.

Disturbance of the Heat-Regulating Mechanism.

One patient died in coma with hyperpyrexia. It is probable that anoxia caused irreversible changes in the heat-regulating centres of the brain, so that a condition similar to heatstroke arose. (In this instance, the weather, though humid, was not excessively hot.) There was no evidence of cerebral malaria. He had been receiving routine suppressive "Atebrin" treatment, and was also given ten grains of quinine intravenously for five doses, but these measures made no difference to his condition.

A high-explosive fragment caused a large tear in the greater curvature of this patient's stomach and divided the right gastro-epiploic vessels, so that he lost a great deal of blood. He was resuscitated with five litres of blood, and operation was performed four hours after receipt of the wound.

Although he had an adequate fluid intake of four litres of serum a day and passed two litres and more of normal urine per day, his temperature rapidly rose to a constant level of 107° F. in spite of all efforts to lower it, and he became unconscious. The significant feature was that he never sweated after operation, except on the third day, when there was a slight skin action and his temperature dropped to 103° F. He then became conscious, but was confused. Nevertheless, he again stopped sweating, the temperature rose to 107° F., and he died on the fourth day.

Autopsy disclosed that all organs, including the brain, were grossly normal. There was no infection of the abdominal cavity.

Fæcal Peritonitis.

There were two deaths from peritonitis due to contamination of a hæmoperitoneum with liquid fæces, which had escaped from a perforation of the colon. In one case the damaged bowel was exteriorized, and in the other it was resected and a gun-barrel colostomy was performed. Both patients died on the fourth day from *Bacterium coli* peritonitis. It is well known that this type of peritonitis is most lethal in its effects, and penicillin cannot improve the prognosis because of the wide fæcal contamination of the peritoneal cavity.

Associated Injuries.

One patient, who had a perforated small bowel and colon treated respectively by suture and colostomy, died from an associated penetrating wound of the left ceerbral hemisphere caused by a machine-gun bullet. He was admitted to hospital in coma, and died eighteen hours later without recovering consciousness.

Congenital Absence of the Right Kidney.

One patient was most unfortunate, in that he had only a left kidney, his right kidney and ureter being congenitally absent—a condition which occurs only once in 700 individuals.(7) A bullet shattered his spleen and left kidney and perforated the splenic flexure of his colon. Splenectomy, nephrectomy and exteriorization of the damaged colon were performed. He passed no urine at all after operation, lapsed into coma and died on the sixth day. An autopsy disclosed the absence of the right kidney and ureter.

SUMMARY.

1. Twenty-seven cases of gunshot wounds of the abdomen are discussed. Eighteen patients had bowel perforations and nine solid viscera involvement only. Nine of the former and eight of the latter survived.

2. Irreversible shock due to anoxia of vital organs caused six deaths, three shortly after receipt of the wounding and three later, two from traumatic uræmia and one from hyperpyrexia. Fæcal peritonitis caused two deaths, associated brain injury one and destruction of a single kidney another.

3. Of the 17 patients who survived, six had postoperative complications, two having pulmonary emboli, two abdominal abscesses, one a biliary fistula and one a wound infection. Two of these developed a ventral hernia through the laparotomy wound, in one case due to infection and in one to a biliary fistula.

4. At the end of three months ten patients were back in their unit doing the same work as previously, most of them having been back about a month, three were in a convalescent depot, and one was discharged from the army fit for sedentary work a month after his colostomy had been closed. Two were still in hospital two months after receipt of the wound, one about to have a colostomy closed and one convalescing from repair of a ventral hernia. One was still in hospital six weeks after receipt of the wound, about to go to a convalescent depot.

ACKNOWLEDGEMENT.

We wish to thank the Director-General of Medical Services, Australian Military Forces, Major-General S. R. Burston, for permission to publish this report.

REFERENCES.

(1) S. O. Aylett and A. F. Alsop: "Surgery and Anæsthesia of War Wounds of the Abdomen", *British Medical Journal*, Volume I, 1945, page 547.

(2) E. H. Darmady, A. H. Siddons, T. C. Corson, C. D. Langton, Z. Vitek, A. W. Badenoch and J. C. Scott: "Traumatic Uræmia. Reports on Eight Cases", *The Lancet*, Volume II, December 23, 1944, page 809.

(3) M. E. De Bakey and B. N. Carter: "Current Considerations of War Surgery", *Annals of Surgery*, Volume CXXI, May, 1945, page 545.

(4) J. E. Dunphy: "The Therapy of Shock", *Post-Graduate Medical Journal*, Volume XXI, April, 1945, page 112.

(5) "Traumatic Anuria", *The Lancet*, Volume I, February 24, 1945, page 244.

(6) G. Gordon-Taylor: "Second Thoughts of the Abdominal Surgery of Total War. A Review of 1,300 Cases", *The British Journal of Surgery*, Volume XXXII, October, 1944, page 126.

(7) J. C. Boileau Grant: "A Method of Anatomy", Third Edition, 1944, page 275.

(8) H. Harkins, O. Cope, E. Evans, R. Phillips and D. Richards: "The Fluid and Nutritional Therapy of Burns", *The Journal of the American Medical Association*, Volume CXXVIII, June 16, 1945, page 475.

(9) A. G. Lowdon: "War Wounds of the Abdomen. Report of Sixty-Four Cases Treated by Laparotomy", *Edinburgh Medical Journal*, Volume LI, June, 1944, page 257.

(10) W. H. Ogilvie: "Abdominal Wounds in the Western Desert", *Surgery, Gynecology and Obstetrics*, Volume LXXVIII, March, 1944, page 225.

(11) W. H. Ogilvie: "Some Applications of the Surgical Lessons of War to Civil Practice", *British Medical Journal*, Volume I, 1945, page 619.

(12) C. G. Parsons: "Traumatic Uræmia", *British Medical Journal*, Volume I, 1945, page 180.

(13) E. L. Rohlf and J. M. Snyder: "Surgical Experiences in Abdominal Wounds in North African Campaign", *Surgery, Gynecology and Obstetrics*, Volume LXXIX, September, 1944, page 286.

LIPOMATA OF THE UTERUS, WITH REPORT OF A CASE.

By J. D. Hicks,

From the Department of Pathology, Prince Henry's Hospital, Melbourne.

A tumour of the uterus containing fat cells is of considerable interest, in that less than fifty such tumours are recorded in the literature,(1) and some speculation is excited as to the origin of fatty tissue in an organ where fat is not usually present—where, in fact, it is practically never seen.

Under the heading of "lipomata", or fatty tumours, are described tumours which consist almost solely of adipose tissue, as well as others with a varying admixture of fibrous, myomatous and fibromyomatous elements. About one-third of the reported specimens appear to be simple lipomata, and the majority contain a good deal of fibrous tissue or smooth muscle.

A small percentage of the tumours containing fat are sarcomatous in nature, the malignant activity being found more in muscle cells than in the fat.

The clinical history of patients with fatty tumours, and their age group, symptoms, signs and prognosis, are similar to those of patients with fibromyomata. The discovery of fat within the fibroid is a surprise awaiting the pathologist, and it may not be obvious until microscopic preparations have been examined.

The majority of the tumours are found in the *fundus uteri*; a few occur in the cervix or as small polypi. Commonly five to fifteen centimetres in diameter, they are at times very small. The presence of fat may be suspected by the pale yellow colour of the tumour or by its soft consistency, which is in considerable contrast to the firm, whorled surface of a fibroid tumour, sometimes pinkish, sometimes pearly in colour.

Individual tumours may vary in the amount of fat they contain from one area to another; but the larger tumours are more likely to contain greater proportions of fibrous or muscular tissue.

Few suggestions as to the origin of the fat cells have been put forward, beyond those which had already been expressed forty years ago,(2)(3)(4) and little evidence has been gathered towards a complete or satisfactory explanation.

There are three possible sources of the fat cells in these tumours. They may arise from cells which retain the potentiality of differentiating into fat cells—that is, from the totipotent primitive mesenchymal cell—or from unipotent cells in embryonic rests of Cohnheim. Perhaps, also, an occasional lipoblast may have migrated into the uterus along with blood vessels and nerves, there to indulge a tumour-producing propensity. Secondly, there may be a metaplasia of already differentiated cells in the uterus, a transformation of connective tissue or of fibrous or muscular tissue into fat. Finally, connective tissue cells, or muscle cells, of uterine origin may undergo fatty degeneration. The occurrence of tiny fat droplets in connective tissue or muscle cells in some of the tumours containing large fat cells suggests to one author(5) that the latter may have arisen by way of fatty degeneration of the normal tissue elements, but to another(6) that the fat cells come from a specially differentiated connective tissue. Baniecki(7) hints at a possible relationship with *diabetes mellitus*.

It can hardly be thought that a true lipoma is a degeneration of muscle or connective tissue cells, but rather it is a proliferation of fat cells, whether their precursors in the substance of the uterus are totipotent cells of the primitive mesoderm or awakened embryonic rests. In the majority of the tumours in which fibrous tissue and smooth muscle play a large part, these cells are healthy and show little degenerative change; they do not resemble the cells of fibromyomata in which fatty degeneration has taken place. I have found no mention of the presence of fat cells in an otherwise normal uterus, but on two occasions I have seen a small group of typical fat cells on routine examination of sections, once from the cervix and once from the *fundus uteri*. No abnormality in those sections could suggest a reason for the presence of the cells.

The mixed mesodermal tumours of the uterus, with their striated muscle and cartilage, illustrate the diversity of tissues which may arise within the uterus, and the production of a simple tissue such as fat should not be deemed beyond the capabilities of this organ. It seems reasonable to attribute the fat cells of the true lipomata and of most of the fibromyolipomata to cells laid down in the *Anlage* of the uterus, which have retained the potentiality of developing into mature adipose tissue.

Report of a Case.

M.N., a married woman, aged fifty-seven years, was admitted to hospital in January, 1941. She had been attending the out-patient department with a complaint of indigestion; a test meal examination revealed hypochlorhydria, and subsequent administration of hydrochloric acid gave her some relief. All her five children were well. The menopause had occurred three years previously, after which she had had no further blood loss until seven weeks prior to her admission to hospital, when she had noticed a slight spotting of blood. On examination of the patient, the uterus was found to be enlarged to about the size of a pregnancy of four months' duration. Recently she had experienced some frequency of micturition, but no scalding. Total hysterectomy was performed by Dr. L. S. Kidd, and the specimen was sent to the pathology department with the label "fibroma". The Fallopian tubes and the ovaries did not appear to be diseased.

On pathological examination, the uterus presented a smooth, rounded appearance. On bisection the specimen was seen to consist of a rounded tumour seven centimetres in diameter, the muscular wall of the uterus being stretched thinly round it. The tumour lay in the anterior wall of the uterus, a long, curved, narrow cavity running upwards behind the mass. Only part of the cervix was present. The tumour itself was pale in colour, with a yellowish tint. It was slightly lobulated, and the surface was smoother than a fibromyoma and did not show the firm, tight whorls of that type of tumour. The consistency was soft, much softer than that of a fibroid tumour, but firmer than that of normal adipose tissue.

Microscopic examination revealed the presence of a large amount of normal fat tissue, supported by a fibrous framework (Figure I). While fat comprised about 70% of the tumour, and fat cells were seen in every low-power field, fibrous tissue predominated in some areas. After differential staining, smooth muscle fibres were identified, but only in the walls of blood vessels and not as part of the tumour itself. A diagnosis of lipofibroma of the uterus was made.

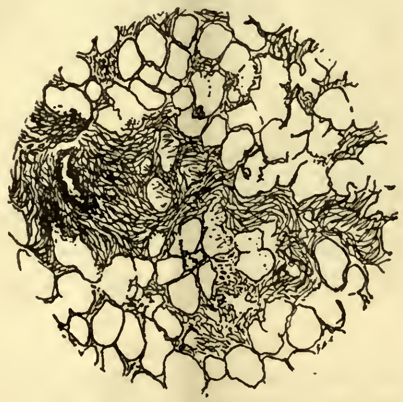


Figure I.

Showing the relative proportions of fat and fibrous tissue in a typical field.

Acknowledgements.

I wish to thank Dr. L. S. Kidd for his permission to report this case, and Mr. G. Aubrey-Crowe for the drawing.

References.

⁽¹⁾ F. L. Ritter and S. W. Stringer: "Lipoma of Uterus", *The American Journal of Obstetrics and Gynecology*, Volume XL, 1940, page 501.

⁽²⁾ J. H. M. Knox: "Lipomyoma of the Uterus", *The Bulletin of the Johns Hopkins Hospital*, Volume XII, 1901, page 38.

⁽³⁾ A. Sitzenfrey: *"Drei seltene Geschwülste"*, *Zeitschrift für Geburtshülfe und Gynäkologie*, Volume LXVII, 1901, page 32.

⁽⁴⁾ A. G. Ellis: "Lipoma of the Uterus", *Surgery, Gynecology and Obstetrics*, Volume III, 1906, page 658.

⁽⁵⁾ H. Williamson and R. St. L. Brockman: "Fibro-Myo-Lipomata of Uterus", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXVIII, 1921, page 290.

⁽⁶⁾ A. C. Starry: "Fatty Tumours of the Uterus", *Surgery, Gynecology and Obstetrics*, Volume XLI, 1925, page 642.

⁽⁷⁾ H. Banieckl: *"Lipomyom des Uterus und Diabetes Mellitus"*, *Archiv für pathologische Anatomie und Physiologie*, Volume CCLXXXVII, 1932, page 483.

THE TREATMENT OF INGUINAL HERNIA.

By Franklyn V. Stonham,

Lieutenant-Colonel, Indian Medical Service; Officer in Charge of the Surgical Division of a General Hospital.

Inguinal hernia is one of the commonest of surgical disorders which requires treatment by operation. The Bassini operation, which was introduced in 1888, is one of the most important milestones in surgical progress. As Professor Grey Turner is often in the habit of pointing out, the surgical treatment of hernia has in the past been of the utmost importance, since so much of our modern surgical knowledge and operative technique has been built up around hernia operations. The Bassini operation since its introduction has undoubtedly cured millions of sufferers; but the results have fallen short of 100%, and the operation has therefore undergone innumerable modifications. In fact, if one inspects the records of any hospital, one will usually see the procedure employed entered on the documents as "modified Bassini operation". The soundness of the Bassini operation was first contested in 1899 by R. Hamilton Russell, who held that all herniæ were congenital in origin—that is to say that the sac has been present always and has remained a potential source of hernia until increased intraabdominal pressure has forced something into it and caused it to become distended and clinically evident. Hamilton Russell held that weakness of the musculature had primarily nothing to do with the production of the hernia, but was secondary to its presence. Russell regarded the inguinal canal as a sphincter normally in a state of tonus which increased reflexly when the intraabdominal tension was raised by physical exertion — straining, micturition, coughing *et cetera*. That is to say, the muscles contract isometrically. That a process of peritoneum passes through the inguinal canal into the scrotum, which should close before birth, is accepted by embryologists; but Russell's contention that femoral hernia, direct hernia and herniæ in other sites are all due to a preformed sac depending upon a process of peritoneum following the blood vessels which emerge from the abdomen has been disputed, and the weight of opinion is now against it. Russell therefore concluded that since the presence of the sac was the primary cause of the hernia, removal of the sac alone was sufficient to effect cure, and that any meddling with the mechanism of the inguinal canal was not only superfluous but actually harmful, since attempts to close the canal by suturing the conjoined tendon to Poupart's ligament would be likely to cause atrophy of the former structure and thus favour recurrence or the development of a direct hernia. Russell's theory was vigorously attacked at the time when it was put forward, especially on embryological grounds by Sir Arthur Keith, and surgery has been slow to adopt the Russell principle in operations. Russell practised surgery at Melbourne, and while a number of Australian surgeons follow his procedure, others prefer the Bassini technique or one of its modifications, holding that recurrences follow the Russell operation and that they have seen recurrences in patients who had actually been operated upon by Hamilton Russell himself. Recently, however, there has been rather a swing back to simple excision of the sac as opposed to more complicated procedures, there being no substantial evidence to support any claim for a lower rate of recurrence from such procedures. Philip Turner has advocated simple removal of the sac in children without division of the external ring. The soundness of the Bassini operation has also been challenged by Ogilvie and others, and recently Brandon (1945) in a carefully considered paper has emphasized the value of simple excision of the sac in suitably chosen cases. Brandon quotes Saint Thomas's Hospital statistics, which rather tend to suggest that simple excision of the sac is followed by a recurrence rate of approximately half that of the alternative procedures which are now popular—namely, the operation associated with the names of Bassini, Fowler, McArthur, Bloodgood and Galile.

Caution should be exercised, however, in the acceptance of any hernia statistics at their face value, since other factors than the technique employed may contribute to failure. This point will be discussed below. Moreover, it is in the apparently less favourable type of case that the surgeon is often tempted to employ one of the more ambitious procedures. There is much truth in what Hamilton Russell used to say, when he emphasized that much more could be learnt from one case carefully and minutely studied than from all the statistics which were ever published. The essence of the matter is that while simple excision of the sac suffices for the vast majority of indirect herniæ, each case should be carefully considered on its merits, and the procedure adopted should be varied according to what is demanded by the conditions found. In other words, no single stereotyped operation will meet the needs of every case in every set of circumstances.

Causes of Recurrence.

1. The Bassini operation is faulty in principle and interferes with the efficiency of the sphincteric mechanism of the inguinal canal. Exposure demands dislocation of the cord and unnecessary trauma. Suture of the conjoined tendon to Poupart's ligament may be followed by atrophy, especially if large bites of tissue are taken and the sutures are tightly tied. In any case, as Wakeley (1940) points out, it is difficult to secure any sound union between muscle and tendon. In by far the majority of instances in which an operation for recurrence is performed, exploration reveals that the original operation was of the Bassini type.

2. Failure carefully to isolate the sac and remove the whole of it appears to be a potent factor in the production of recurrence. In carrying out operations for recurrence it is not uncommon to find what appears to have been the original neck *in situ* and a nodular mass indicating the site of the original ligature below it. The operator had evidently relied on his attempts to obliterate the canal to prevent recurrence. As Edwards (1943) puts it, "the original hernia is reproduced".

3. The use of catgut is probably a fairly common contributing factor. The tissues of some patients have the faculty of digesting catgut quickly, and sutures, especially when tied with some degree of tension, tend to give way. This may be one of the reasons why the recurrence rate after the Bassini operation is not higher than it is. Catgut also causes a tissue reaction, and in addition, to borrow a term from Leriche, "subinfection" if not actual suppuration. This is especially likely to develop under tropical conditions, and it is not uncommon to find at a subsequent operation for recurrence that the incision in the external oblique aponeurosis has become undone. Unabsorbable sutures are preferable, and with careful technique the risk of a persistent sinus is negligible. I have abandoned silk in favour of fine braided nylon ("Deknatel"), and with this material more than two hundred hernia operations have been carried out in tropical climates without the slightest trouble in securing primary healing; further, as far as can be ascertained, there has been no subsequent evidence of sinuses or "stitch abscesses". Interrupted sutures are to be preferred, but as Haxton (1945) points out, continuous nylon sutures can be used with impunity.

4. A history of ineffective and inadequate after-treatment can be obtained in a large proportion of cases in which recurrence has followed within a year or so of the original operation. This occurs in military practice, and it is due either to failure on the part of the surgeon to give instructions that no severe physical exertion or weight-lifting be indulged in for at least three months, or, more commonly, to the surgeon's instructions having been disregarded. The loading of heavy boxes onto a truck is apt to be regarded by some people as "light work". In civil practice the patient, who may be a labourer, may himself be at fault.

5. Unskilled operating is often held to be a frequent source of recurrence, and it is stated that the recurrence rate is likely to be high in institutions where hernia operations are relegated to inexperienced house surgeons. The obvious remedy is not to take this class of work out of their hands, but to teach them to do it properly.

6. Complicated operations usually defeat their own object. Operations which distort normal anatomy, like Halstead's and Schmeiden's, are fundamentally unsound; recurrences follow, and it is questionable whether a more simple procedure would not have been better in the first instance. Recently I have seen a patient who had undergone a bilateral Halstead operation eight months previously, which was followed by bilateral recurrence and bilateral testicular atrophy. Recurrences follow the Gallie operation. This operation has a distinct sphere of usefulness; but the idea of using "living" sutures has captivated surgical imagination, and the procedure is often used as a routine measure for cases in which it is not required, and the operation is thus likely to be brought into disrepute. Fascial sutures are not without disadvantages. They require careful fixation with silk, and the large needle used to insert the minflicts appreciable trauma. Fascial sutures do not grow and "become incorporated in the tissues". At operations for recurrence they can be seen apparently unaltered by any growth. Silk or nylon would in many instances have been equally effective.

When recurrences follow one of the more complicated "repairs" the surgeon is often faced with a difficult problem. When recurrence follows simple removal of the sac the surgeon has undamaged tissues to deal with at the subsequent operation, and this is in itself a strong argument in favour of the latter procedure.

7. Failure to suture the *fascia transversalis* has been cited as an omission which may favour recurrence. While this fascia may be found to be a strong sheet of tissue in cadaver dissections, it is a variable structure. When the sac is isolated by gauze dissection and twisted before the ligature is applied, the defect in the fascia is probably sufficiently approximated to allow it to heal over without sutures. W. J. Lytle (1945), who has made careful anatomical studies of the inguinal canal, recommends that the internal ring be narrowed by sutures inserted from below upwards, but admits that twisting of the sac prior to ligature probably draws the *fascia transversalis* together sufficiently to produce a narrowing of the ring. In many herniæ it is difficult to find anything but some filmy tissue, and dissection and retraction necessary to suture firmer material may do more harm than good. The influence of the *fascia transversalis* in preventing recurrence is probably not of great importance. The principal offender is the sac itself acting as a dilator.

8. Errors in diagnosis may lead to pseudo-recurrence. A sac may be bilobed and only one loculus may be removed. Inguinal sacs have occasionally been removed when the patient has actually been suffering from a femoral hernia. The importance of precise diagnosis cannot be overemphasized. When a patient states that his hernia recurred soon after his discharge from hospital, it is probable that the wrong sac was removed.

9. Patients suffering from chronic cough, stricture, prostatic enlargement or severe chronic constipation are unfavourable subjects for operation. Operations upon very old people, or upon those of poor physique with tissues of poor quality, and upon the very obese, may be expected to have a somewhat higher recurrence rate. Previous suppurative inguinal adenitis may considerably weaken the tissues.

Operation for Inguinal Hernia.

Anæsthesia.

If one wishes to ascertain the competency of the sphincteric action of the inguinal canal, it is obvious that its action must be actually witnessed. Local infiltration with "Novocain" enables the contraction and any descent of the conjoined tendon to be seen and felt. Local infiltration, moreover, permits the patient to cough, and the sac can readily be found and its limits determined. Local infiltration has two disadvantages. One is the fact that the healing powers of the tissue are slightly interfered with and there is a small addition to the risk of infection, and the other is the fact that traction on the peritoneum during the manipulations necessary for isolation and high ligature of the sac sometimes causes pain and vomiting.

Spinal analgesia lacks these drawbacks, and I now use it as a routine method. Six to eight millilitres of a 1 in 1,500 solution of "Nupercaine" are injected moderately slowly into the spinal theca, and the patient is turned face down at once with a small pillow under the epigastrium and kept face down for seven minutes. The table is tilted to 10° of "head-down" position, and this tilt is maintained during operation. This gives satisfactory anæsthesia of the sensory roots, while voluntary movement of the abdomen and legs is retained. The patient is able to contract the abdomen and to cough.

Operative Technique.

The drapes are arranged so that one towel clip is on the anterior superior iliac spine and another is just above the root of the penis. The incision is three and a half inches long; it commences three-quarters of an inch lateral to the penis and half an inch below and parallel with the edge of the upper towel. The skin, fascia of Camper and fascia of Scarpa are incised in the same line. Branches of the superficial inferior epigastric and the superficial external pudendal vessels are caught and ligated, and other small bleeding points are seized in fine-pointed hæmostats and twisted at the conclusion of the operation. Skin towels are then clipped to the edges of the incision, the instruments are discarded and gloves are sluiced in antiseptic lotion. The external ring is then sought and two small Kocher forceps are clipped on to it for subsequent identification, and the external oblique aponeurosis is incised in the direction of its fibres, which is roughly the same as that of the wound. It is not necessary extensively to clear the aponeurosis of fascia. The cut edges are retracted upwards and downwards by being clipped with tissue forceps. If it is remembered that the sac of an indirect hernia passes from above downwards in front of the contents of the cord, it is easily found. Without disturbance of the cord, an incision is made parallel with and at the upper part of the cord, passing through the cremaster, the cremasteric fascia and the infundibuliform fascia—which, incidentally, may exhibit more than one distinct layer—and the sac is exposed. The patient is then asked to cough, and the extent of the sac can be seen. The sac is then seized with forceps and isolated as far as possible by sharp knife dissection, the isolation of the neck being completed by gauze stripping. If the sac is large and adherent, the distal portion need not be dissected out. If it is cut off and incised longitudinally, the subsequent development of a funicular hydrocele need not be feared. The sac is opened to ensure that it is empty, twisted, transfixed and ligated flush with the peritoneum. When released, it retracts into the abdomen out of sight.

The patient is again asked to contract the abdominal wall or to cough. The efficacy of the removal of the sac is inspected and the physiological action of the conjoined tendon observed. If as in the majority of cases both appear satisfactory, nothing more is done and the wound is closed. A few interrupted sutures close the incision in the infundibuliform and cremasteric fascia, and the external oblique aponeurosis is then examined for slackness. If none is present, the aponeurosis is united with interrupted sutures one-quarter of an inch apart or else by a continuous stitch. If slackness is present, excess is taken up by overlapping of the edges with interrupted sutures. If the external ring previously examined was found to be large, it is reduced by sutures to normal proportions—that is to say, to a size at which it just admits the tip of the finger. The external oblique thus braces up the deeper muscles and allows them to shorten. The skin incision is closed by four sutures, one-quarter inch from the edge, passing through all layers down to the deep fascia, and intermediate sutures unite the skin edges.

Before the external ring is examined the gloved hands are washed with antiseptic solution; but otherwise "no-touch" technique is observed throughout. If it is necessary to handle the tissues, they are seized with gauze. Tying with forceps and the use of the Singer suturing instrument completely eliminate the risk of contaminating the suture material.

Fine braided nylon thread is used throughout, and ends are cut short over triple knots. If the neck of the sac seems rather bulky for fine material, to save trouble the thread is put in double.

After-Treatment.

The patient is kept strictly in bed for twenty-one days after operation, and deep breathing exercises are carried out from the start to maintain the tone of the abdominal musculature. The more elaborate exercises preferred by physical therapists are not essential. The stitches are taken out when the wound has healed—that is to say, in about five or six days. The patient is allowed up on the twenty-first afternoon and permitted to walk about. He is discharged from hospital a day or so later, and emphatically warned against strenuous exertion, especially the lifting of weights, for three months; otherwise normal activity and sport are unrestricted. Double herniæ may be repaired at one sitting with a complete change of gloves and instruments. A. K. Henry's approach through a mid-line incision with extraperitoneal ligature of both sacs is more difficult, but the principle is much the same.

Difficult Herniæ.

Less favourable herniæ for operation comprise very large inguinal herniæ with stretching and atrophy of the surrounding tissues; direct hernia, in which atrophy is nearly always present; and recurrent hernia. To minimize the risk of recurrence something more than simple removal of the sac is necessary. The proportion of cases in which a more elaborate operation is required varies according to the type of practice. For routine practice in civilized countries, simple removal of the sac should suffice in at least 90% of cases; but amongst backward communities, especially in oriental countries, one finds a larger proportion of the neglected type of hernia. For these patients it is doubtful whether any stereotyped "cookery-book" type of operation can be relied upon for every type of hernia and in every circumstance, and the operation should be "tailor made" to suit the needs of the individual patient. Surgical ingenuity can select one of a number of procedures. In Bloodgood's operation a flap of fascia is turned down from the anterior rectus sheath and sutured to Poupart's ligament. There may be difficulty in securing a large enough flap, and a weak spot in the abdominal wall is left. Philip Turner's patch can sometimes be used with advantage. A flap of *fascia lata* hinged on Poupart's ligament is turned up under the latter structure and sutured to the transversalis fascia, or better still, with very slight tension to the conjoined tendon. The flap may require a separate incision, but it can be obtained by stripping down and retraction—a somewhat bloody procedure, as many small vessels are present. This, again, has disadvantages. A weak part is left from which the fascia has been taken, and it may be impossible to get enough fascia. There is also some risk of injuring the femoral nerve and vessels. A free *fascia lata* graft may be used instead.

Gallie's *fascia lata* repair may be employed with advantage in certain cases. However, large amounts of *fascia lata* cannot be taken with complete impunity, as the resulting defect may itself subsequently worry the patient. For large hernial defects a silk lattice or floss-silk darn may be the only course open. The slight risk of infection in these cases, in which a large amount of foreign material is introduced, cannot be dismissed lightly. In the event of such a misfortune the results are truly disastrous, and the unfortunate patient may spend many months in hospital.

Recently Mair has claimed success in the use of whole-skin grafts to close hernial defects. Apparently he has had no trouble with sepsis, and the epithelial elements of the skin seem to disappear.

Lately there has been some tendency to revert to McGavin's silver-wire filigree. This method never enjoyed wide popularity, and any unfortunate supervention of sepsis left the surgeon with an extremely difficult problem. However, it seems that in successful cases the cure has been permanent and complications have been infrequent (Grey Turner, 1943). This operation may in the future have a limited but distinct scope, especially since new metals like vitallium and tantalium, which are much more readily accepted by the tissues, are available.

Summary.

1. The case for simple excision of the sac to cure oblique inguinal hernia has been stated.
2. The causes of recurrent hernia have been discussed.
3. The value of local and spinal anæsthesia in determining what procedure is indicated in hernia operations has been given emphasis.
4. The technique of an operation based on Hamilton Russell's operation has been described in detail.

Bibliography.

W. J. M. Brandon: "Inguinal Hernia; House that Bassini Built", *The Lancet*, Volume I, February 10, 1945, page 167.

H. C. Edwards: "Inguinal Hernia", *The British Journal of Surgery*, Volume XXXI, October, 1943, page 172.

H. Haxton: "Nylon for Buried Sutures", *The British Medical Journal*, Volume I, January 6, 1945, page 12.

W. J. Lytle: "The Internal Inguinal Ring", *The British Journal of Surgery*, Volume XXXII, April, 1945, page 441.

G. B. Mair: "Preliminary Report on the Use of Whole Skin-Grafts as a Substitute for Fascial Sutures in the Treatment of Herniæ", *The British Journal of Surgery*, Volume XXXII, January, 1945, page 381.

R. Hamilton Russell: *The Lancet*, Volume II, 1899, page 1353; also personal communications.

F. V. Stonham: "Nylon", *The Indian Medical Gazette*, Volume LXXVII, 1942, page 283.

D. C. Turner and G. Grey Turner: "Modern Operative Surgery", 1943, page 1049.

R. P. Rowlands and P. Turner: "The Operations of Surgery", Eighth Edition, 1937, page 27.

C. P. G. Wakeley: "Treatment of Certain Types of External Herniæ", *The Lancet*, Volume I, May 4, 1940, page 822.

Reports of Cases.

RUPTURE OF THE LIVER IN THE NEW-BORN: RECOVERY AFTER BLOOD TRANSFUSION AND LAPAROTOMY.

By Felix Arden, M.D., M.R.C.P.,
Medical Superintendent, Brisbane Children's Hospital, Brisbane.

The following case is reported in view of the comparative rarity of the condition and because recovery from it appears to be exceptional.

Clinical Record.

R.E., a male infant, aged two days, was admitted to the Brisbane Children's Hospital at 2 p.m. on December 29, 1944, because of pallor, breathlessness and inability to suck. These symptoms had first appeared that morning, approximately thirty-six hours after the child's birth. The child had been born at full term; he weighed nine pounds and had presented by the vertex. The obstetrician in attendance had been obliged to use forceps for the head and had experienced some difficulty with the shoulders, but had exerted no force on the trunk. Resuscitation had not been required. None of the mother's four previous confinements had been easy, as her pelvic measurements were small. Her first baby weighed ten pounds and was stillborn; the other three needed instrumental delivery.

When first examined the infant was noticeably pale and looked ill. His breathing was hurried (88 respirations to the minute), but not laboured. The temperature was 100·2° F. No other abnormality was discovered at the initial examination, and a provisional diagnosis of pneumonia was made. During the next two hours the baby's condition deteriorated rapidly. By 4 p.m. he was much paler and had grown restless. His breathing had become gasping and typical of air-hunger. The pulse was almost imperceptible. His abdomen was found to be slightly distended and dull on percussion all over the right side and in the left flank. It was now reasonably certain that the child had a massive intraperitoneal hæmorrhage.

Blood transfusion was started immediately, stored group O blood from the hospital blood bank being used without a delay for cross-typing. The large amount of 200 mils of blood was given rapidly and another 100 mils were added during the next four hours. One mil of a vitamin *K* preparation was injected intramuscularly. The transfusion was of immediate benefit; the infant's colour returned and his distress abated; but his abdomen remained distended and dull on percussion in the flanks.

Operation was performed at 8 p.m. under anæsthesia with ether given by the "open" method combined with local infiltration of the abdominal wall. On the assumption that the liver was the most likely organ to be involved, the abdomen was opened by a right upper paramedian incision. The peritoneal cavity was found distended with blood and blood clot, and exploration revealed a deep fissure, two inches long, in the antero-superior surface of the right lobe of the liver close to the mid-line. Blood was oozing freely from the torn liver substance.

Owing to the friability of the liver, attempted closure of the gap with mattress sutures proved unsatisfactory. However, the fissure was so fortunately placed that it was possible to suture the torn edges of the liver capsule to the cut edges of the parietal peritoneum. This had the effect of shutting off the peritoneal cavity from the source of the bleeding and rendered the oozing laceration in the liver subject to control by external pressure. A strip of the right *rectus abdominis* muscle, with a pedicle at the lower end, was placed in the fissure in the liver substance and the abdominal wall was closed. No gauze packing was used. Firm pressure was applied by strapping over dressings.

The hæmoglobin value, estimated just before the blood transfusion, was 52%. Four days after the operation it was 95% (100% = 13·8 grammes of hæmoglobin per 100 mils).

Apart from some post-operative vomiting and slight delay in wound healing, the baby made an uneventful recovery and was discharged from hospital in good health fourteen days later. When examined at the age of seven months he was in magnificent condition and weighed 20 pounds.

Comment.

The comparative rarity of rupture of the liver in the new-born has been mentioned. Nevertheless, the "Quarterly Cumulative Index Medicus" refers to seven case reports in the past seven years, and the condition is described in a few obstetric text-books. There is a good account in Ehrenfest's monograph on birth injuries.(1) He quotes Palmer,(2) who, investigating the cause of 144 fœtal deaths, found five cases of liver injury, three in which deep tears were present, and two in which the lesions were merely subcapsular hæmorrhages. Several writers quote Lundquist,(3) who encountered at post-mortem examination five deep parenchymatous injuries of the liver among 49 instances of intraabdominal hæmorrhage in the newly born. No doubt the condition is sometimes overlooked and would be met more often if more post-mortem examinations were made.

With regard to the causation, it is surprising that the large friable liver of the new-born, which often projects well below the protecting ribs, is not ruptured more often. Extraction of the trunk during breech delivery and the application of strong fundal pressure are quoted by Berkeley, Bonney and MacLeod(4) as possible ways in which the liver may be injured. To this list accidental blows on the mother's or child's abdomen and vigorous attempts at resuscitation must be added. The most interesting ætiological fact, however, is that in some well-attested cases (for example, Berry's(5)) the condition appears as a spontaneous one, the trauma incidental to normal delivery sometimes being enough to produce the damage. This was almost the case in the present instance.

The delay in the onset of symptoms is characteristic. To quote Ehrenfest:(1)

> From the viewpoint of diagnosis it is striking that infants, eventually dying from a ruptured liver, apparently as a rule seem perfectly normal for approximately the first three days of life. Symptoms of serious illness do not manifest themselves until a considerable amount of extravasated blood has reached the peritoneal cavity. Then death is prone to occur suddenly and unexpectedly.

It seems likely that a subcapsular hæmatoma forms first and that urgent symptoms supervene only when the capsule eventually gives way.

Rupture of the liver in the new-born has always been regarded as a fatal condition. Schmitt,(6) from a review of the literature, concluded that prophylaxis, diagnosis and treatment were alike unsatisfactory. Tow(7) said of these cases: "Most children who survive the first twelve hours appear fairly normal for a couple of days. Then they suddenly become ill, go into shock and die within a few hours without presenting any local physical signs." Ehrenfest, in his account of the disease, quotes a number of cases, all fatal. He refers to the "usually quite unexpected discovery (at post-mortem examination) that the liver has been injured". He does not mention survival. The available literature records only fatal cases, the diagnosis being made *post mortem*.

The infant whose recovery after blood transfusion and laparotomy is here reported was in the following ways fortunate: he was vigorous and above average weight; he came under observation in time; and the fissure in his liver was in an accessible place.

References.

(1) H. Ehrenfest: "Birth Injuries of the Child", 1931, page 286.

(2) Palmer: Medical Research Council of the Privy Council, Special Report Series Number 118, 1928; quoted by Ehrenfest, *loco citato*.

(3) B. Lundquist: "Intrathoracic and Intraabdominal Hæmorrhages in the Newly Born", *Acta obstetricia et gynecologica Scandinavica,* Volume IX, 1930, page 331; quoted by Ehrenfest, Tow *et alii*.

(4) C. Berkeley, V. Bonney and D. MacLeod: "The Abnormal in Obstetrics", 1938, page 422.

(5) J. A. Berry: "Fatal Hæmorrhage from the Liver in an Infant Five Days Old", *British Medical Journal,* Volume I, 1926, page 825.

(6) F. T. Schmitt: "Etiology of Rupture of the Liver in the New Born", *Zeitschrift für Geburtshülfe und Gynäkologie,* Volume CXIV, 1936, page 70; abstracted in *American Journal of Diseases of Children,* Volume LIV, 1937, page 864.

(7) A. Tow: "Diseases of the New Born", 1937, page 108.

REPORT OF A FATAL CASE OF "BLAST" INJURY OF THE SPINAL CORD.

By D. Leslie,
Major, Australian Army Medical Corps.

It is realized that the data with regard to this case are incomplete in many details, but none the less it may be of interest in showing the serious effects which can be produced by bomb blast injury of the spinal cord without apparent bony lesion.

Clinical Record.

The patient, aged twenty-one years, was admitted to an Australian general hospital on the evening of October 10, 1943, uræmic, unable to give a history, and with a temperature of 106° F. He had no external wound but a large bed sore. He appeared to be anæsthetic to the level of the sixth cervical vertebra, and did not move legs or trunk. There were occasional weak movements of the shoulder girdle, but otherwise no movement of the arms. His bladder was distended to the umbilicus.

From the notes accompanying the patient it appeared that he had been injured by bomb blast on October 1 (nine days previously) and that his symptoms and signs developed at once and gradually increased. Thus, when he was examined by his regimental medical officer, he could feel and localize pin pricks in both legs, but when examined at the field ambulance later during the same day he could not do so. He had no plantar response of any sort from the outset. His bladder was catheterized on October 9 at the field ambulance, and he was then evacuated, his bladder being catheterized at least once more during evacuation. It was reported on the day of injury that he had no tenderness or palpable abnormality of the skull or spine. Records showed he had received 76 grammes of sulphaguanidine.

On his admission to hospital, suprapubic cystostomy was performed without anæsthesia and gross cystitis was seen to be present. His condition did not improve and he died ten hours after admission to hospital.

Post-Mortem Examination.

Post-mortem examination revealed bilateral pyelonephritis, it being possible to express pus from the apices of the pyramids of both kidneys. With regard to the central nervous system, the pathologist reported that the brain was normal. In the middle to lower part of the cervical portion of the spinal cord there was an area extending for about one and a half inches in which a brownish discoloration and considerable loss of normal texture were present. The area appeared necrotic and softened. The cord was frozen and cut into sections. Above and below the area of softening the cord was a little congested, but there was no sign of old or recent hæmorrhage; otherwise it appeared normal. No deformity of the bony vertebral canal was seen during the removal of the cord. No X-ray picture was taken.

Comment.

It is regretted that two important pieces of information were not available—an X-ray picture of the cervical part of the spine and a history from the patient himself as to the nature of the trauma—whether the injury was purely one of blast or whether there was some other factor such as a fall or a blow.

Reviews.

PSYCHIATRY AND MODERN WAR.

Dr. R. S. Ellery has a well-earned reputation for dealing entertainingly with controversial matters. It is maintained in "Psychiatric Aspects of Modern Warfare".[1]

In his opening chapter he draws attention to the frailty and fallibility of the human spirit. We must keep our feet on the earth of reality, for is not man "this featherless biped with brains—this monarch of misrule—this sinner-saint of creation! In his intellect how like a god! in his behaviour how like a hyena!" and "Men and women may reverence truth in the abstract, but when the feelings are stirred they will always incline to the cock and bull".

The author pleads for the debunking of war. Good people allow themselves to be stampeded into war through ultra-nationalism. "The bad people are politicians and members of political groups—industrialists, financiers and speculators who put the pursuit of personal profit above any considerations of justice and decency, and who, for their own selfish interests, never scruple to exploit the ill-balanced emotions of men for the most base and ignoble ends." Among them are included the great German and Japanese dictators who by a perverted psychology give "men and women a belief—not in goodness, but in greatness".

In order to underline the brutishness of war, the book is illustrated by a series of drawings by Goya, brilliantly conceived and executed more than a century ago. With the Japanese atrocities before us, we have the realization that sadism in war is not a new phenomenon.

This book was written for a nation in arms. Although the end of hostilities has not altered the main thesis, it has shifted the viewpoint. Dr. Ellery, in showing the great need for psychiatrists, emphasizes the necessity for the psychiatric overhaul of recruits. Rightly he stresses the view that in the production of neurosis and psychoneurosis "the precipitating factors—difficulties in adjustment, fear, fatigue, trauma and other noxious accompaniments of war—produce psychiatric casualties chiefly among those who are predisposed".

In regard to the forms of mental disease and the types of treatment the outlook is conventional. As the disease is a reaction of the whole organism, prognosis and treatment must be based on broad lines.

There is a plea for a psychiatric consultation centre to which men could go for frank and homely discussions of their emotional problems. Running through the pages of this book is the emphasis upon the need for a background of faith. Man for his mental health must have a feeling of present and future security. Dr. Ellery points out that in a changing world, some religious props are losing their hold. "Our anxiety arises from the loosening of those emotional bonds which once existed between man and his celestial God-image." The author holds that: "A new faith must be found—a new formula devised for the re-direction and sublimation of aggressive instincts. This may come through psychology and the keener understanding of the human mind." With this theme there can be little disagreement, though there is a very considerable doubt as to the ideal type of ideology.

No consideration of war would be complete without mention of its aftermath. In a later edition Dr. Ellery should amplify this. More could be said of the unconscious pension hunter. Dr. Ellery hints at the emotional unrest which we are today seeing in a world-wide series of strikes when many are hungry and homeless. He foresees the inescapable results of juvenile mismanagement which is worthy of repetition.

> Society's shabby treatment of its war-time adolescents will demand a reckoning in the near future. Psychiatrists, educators and social workers will have to be prepared to handle that great batch of emotional problems which will follow in the wake of war, arising out of the defective or precocious development of youth. They will have to meet aggressions undisciplined and rebelliousness which flouts authority, frustrations and maladaptations which have led to neurotic incapacity, conduct disorders incidental to deficient education, and damaged personalities taking refuse in dependency.

The book has a useful glossary of psychological terms and is written so as to be easily understandable by the non-medical reader. The field of psychiatry is enormous, its toilers are few, its needs are great. Only by the wider diffusion of such knowledge shall we achieve progress. This interesting book points the way.

THE SURGERY OF PEPTIC ULCERATION.

Nissen's recent work on the technique of resection in duodenal and jejunal peptic ulcer is an intensely interesting study.[1] As Wangensteen points out in his foreword, although remarkable reductions are being effected in the mortality of appendicitis and intestinal obstruction, the mortality of peptic ulcer has remained uninfluenced by therapeutic procedures during the last three decades. Though in the past the distrust of physicians in the ability of surgeons to overcome the ulcer diathesis of a patient with a duodenal ulcer has not been without foundation, this surgical empiricism is now coming to an end. The problem facing the surgeon is, of course, twofold, in that he must not only maintain a low mortality rate for his operations, but at the same time he must complete a procedure which will rarely be followed by jejunal ulceration. Because the mortality rate is the more immediately pressing of these two requirements, surgeons who feel that they must abandon gastro-enterostomy because of its high incidence of subsequent stomal ulceration, have been attracted towards the exclusion forms of gastrectomy. Nissen, however, regards retention of the pyloric antrum as incompatible with cure of the ulcer diathesis, and maintains that the secondary ulceration rate in these operations is little if any less than that which follows simple gastro-jejunostomy.

---

[1] "Psychiatric Aspects of Modern Warfare", by R. S. Ellery, M.D., F.R.A.C.P.; 1945. Melbourne: Reed and Harris. 8½″ × 5½″, pp. 191, with 8 illustrations. Price: 12s. 6d.

[1] "Duodenal and Jejunal Peptic Ulcer: Technic of Resection", by Rudolf Nissen, M.D., with a Foreword by Owen H. Wangensteen, M.D., Ph.D.; 1945. New York: Grune and Stratton. 8¾″ × 5¼″, pp. 144, with 123 illustrations. Price: $4.75.

The main purpose of his book is to show that even in the presence of formidable penetrating duodenal ulcers it is possible to make a partial gastrectomy which includes removal of the pyloric antrum, and yet to keep the mortality rate under 3%. The secret of success is related to the safe closure of the duodenal stump, and with the help of numerous illustrations the author describes a procedure which includes three essential stages, namely, adequate mobilization of the anterior duodenal wall, ample exposure of the crater and avoidance of any surgical manipulations of the posterior duodenal wall.

Nissen's account of the surgery of recurrent jejunal ulcer is largely related to those cases which are a sequel to exclusion operations; and he stresses the point that excision of the excluded segment is still a prerequisite if further ulceration is to be avoided. Where the condition of the patient will permit, the desirable operation for such an ulcer will include removal of the pyloric antrum, closure of the duodenal stump, resection of the anastomotic ulcer with further gastrectomy, and reestablishment of a new stoma. Where such an operation entails undue risks, removal of the excluded segment with or without jejunal feeding for two months will sometimes obviate the necessity for further surgery.

Contrary to the usual practice of the English-speaking surgeons, Nissen advocates an entero-anastomosis in all ante-colic resections, and holds that the resultant absence of alkaline duodenal contents in the region of the main anastomosis does not increase the liability to subsequent ulceration.

As stated above, this is an intensely interesting study by a master of gastric surgery, and its contents should be known to every surgeon who aspires to cure a patient of his peptic-ulcer diathesis.

SYNOPSIS OF SURGERY.

The twelfth edition of "A Synopsis of Surgery" has been produced despite wartime disturbances.[1] It is unnecessary to argue the merits and defects of synopses, but these are manifest in this production. If one wants a summary of the salient features of some important disease it can be found here. Most of the summaries are excellent and representative of solid English teaching. This book would be of value to those with a photographic type of memory who do not need to know the reasons for statements. In this book there is a noted absence of explanations. Perhaps these are out of place in a synopsis, but such omissions detract from its value; for example, in the discussion of the treatment of crush syndrome the physiological basis of treatment is not mentioned. This encourages "vain repetition" on the part of students. Many other instances of this kind could be cited.

Brevity may be the excuse for a dogmatism which is a universal and deplorable failing. That "ether is only rarely used as a sole anæsthetic agent" is open to question. It may help the examination student to be given a rule of thumb, as in the treatment of fractured scaphoid, but it would be better surgery for him to use his judgement, being guided by the X-ray appearance, as well as by the length of history. Experience with thyreotoxicosis makes most surgeons less and less inclined to group all cases into two varieties, primary thyreotoxicosis and toxic adenoma.

Proportion and correct emphasis are difficult to achieve. Yet it seems hardly appropriate to devote two-thirds of a page to burns and more than two pages to the operative treatment of cleft palate, nearly two pages to hydatid cysts and a page to internal peritoneal herniæ.

All textbooks which have taken a reasonable amount of time to prepare are in danger of being out of date by the time they are published. This book is at a disadvantage because there is only a very brief mention of penicillin which has so radically altered the outlook in surgery and medicine. It would appear to have been possible to incorporate more details of experiences with this form of therapy. Sulphonamide therapy is recommended frequently, but with rare mention of dosage, for example, in the treatment of erysipelas. This is important, and the precautions that must be taken are worthy of consideration. The use of sulphonamides has greatly reduced the instance of streptococcal septicæmia, and yet the statement is made that *Streptococcus pyogenes* is the causative organism in more than half the cases. There are several other statements which are out of date. In the discussion on asepsis we read that the operator and all who have to speak must wear a mask while in the theatre. Surely it is time that the silent assistants wore one also. In a list of antiseptics, alcohol in the form of "surgical spirit" receives first mention and high commendation. Sulphonamides and penicillin are last on the list. "B.I.P.P." receives a mention and "Flavine" is recommended. Brandy is also given *per rectum* (perhaps justifiably). Thiourea and thiouracil are not mentioned. One wonders how often avulsion of the phrenic nerve for pulmonary tuberculosis is done now. To us who do not see much tuberculosis of bone the classification of different types of caries as given appears antiquated and unnecessary. Intracranial hæmorrhage is treated in the same old way with most emphasis on the extradural variety. Surely it is time that this fault was eradicated from textbooks. Non-specific urethritis is still incorrectly said to be rare.

Minor errors are always likely to occur in a comprehensive textbook, especially if prepared in a hurry. Nicola's operation is called "Nichol's operation". On page thirty Figures X and XI should be reversed. In the former it is obvious that the incision for infection of the sheath of the *flexor policis longus* muscle has cut the nerve supply to the thenar muscles. More important statements with which many would not agree are that the treatment of spondylolisthesis is by operation (no other treatment is suggested), that "regional ileitis" does not affect the caecum, and that up to twenty minims of Lugol's iodine are needed three times a day in the treatment of thyreotoxicosis.

Notes on Books, Current Journals and New Appliances.

THE DECORATION OF HOSPITALS.

Raymond Sloan, in "Hospital Color and Decoration", has a lot of very new and interesting things to tell the reader on an interesting subject.[1] Writing in an informal style, the author takes the reader on a "conducted tour" through every section of a hospital, including quarters for medical, nursing and domestic staffs. Mr. Sloan rightly lays great stress on the therapeutic value of pleasant and cheerful surroundings; some of his proposals for private rooms, however, sound a bit too exuberant and too glamorous for the average Australian patient, and there is a slight shudder at the idea of a guardian angels and silver stars as wall and ceiling decorations in the nursery. His pages on colour and decoration in public wards are particularly good, and could be studied by the authorities of all hospitals where the bleak uniformity of an institution is the rule. He has many suggestions. Amongst many good ones, are his ideas on furnishing the entrance hall and waiting rooms to create favourable first impressions and to remove many of the patient's misapprehensions; the arrangement of coffee shops and small gardens; and the fitting of cubicle curtains running on rods hung from the ceiling to take the place of the clumsy screen. The author illustrates his points liberally with photographs and line drawings, but has failed to include one of the corridor. This he admits to be the "hospital stepchild" and a problem one, too, and here a photograph would have been of help. This book can be well studied, but Mr. Sloan's advice should be noted that the decoration of a hospital is a job for an expert, not an amateur.

---

[1] "Synopsis of Surgery", by Hey Groves, edited by Cecil P. G. Wakeley, C.B., D.Sc., F.R.C.S., F.R.S.E., F.A.C.S., F.R.A.C.S.; Twelfth Edition; 1945. Bristol: John Wright and Sons Limited. 7¼″ × 5″, pp. 640, with many illustrations. Price: 25s. net.

[1] "Hospital Color and Decoration", by Raymond P. Sloan; 1944, Chicago: Physicians' Record Company. Sydney: Angus and Robertson Limited. 9½″ × 7″, pp. 272, with many illustrations. Price: 32s. 6d.

LLOYD'S

T. P. CLARK & CO.

have pleasure in announcing to Members of the B.M.A. that they have arranged with LLOYD'S OF LONDON facilities for completing on behalf of Members a

DOCTOR'S INDEMNITY INSURANCE

The terms of this Cover and the moderate premiums chargeable are fully set out in a letter which will be mailed to Members of the B.M.A., in the course of a few days from date of this announcement.

Should you not receive this letter would you kindly communicate with

T. P. CLARK & CO.

INSURANCE BROKERS

8-14 Bond Street,
SYDNEY
'Phone BW 4955.

47 Queen Street,
MELBOURNE
'Phone MW 6647-8.

YOUR PATIENT

When you have prescribed send your patient to us and KNOW your prescription will be dispensed accurately. Our triple-checking system, to which every completed prescription is subjected, is a guarantee of precise dispensing.

Co-operate, and use the services of

WASHINGTON H. SOUL PATTINSON & CO. LTD.

City, Suburbs and Newcastle

POST GRADUATE STUDY

☞ **Are you preparing for any Medical or Surgical Examination?**

Send Coupon below for valuable publication

"GUIDE TO MEDICAL EXAMINATIONS"

PRINCIPAL CONTENTS

The Examinations for the Qualifying Examinations.
The M.D. Degrees of all British and Colonial Universities.
How to pass the F.R.C.S. Examination.
The F.R.C.P. & S. of Canada.
The M.R.C.P. London and Edinburgh.
Diploma in Anæsthetics.
The Diploma in Tropical Medicine.
Diploma in Ophthalmology.
Diploma in Psychological Medicine.
Diploma in Child Health.

You can prepare for any of these qualifications by postal study at home and come up to Great Britain for examination. We specialize in Post-graduate tuition.

THE SECRETARY,
MEDICAL CORRESPONDENCE COLLEGE,
19 Welbeck Street, London, W.1.

Sir: Please send me a copy of your "Guide to Medical Examinations" by return.

Name ....

Address ....

Examinations in which interested ....

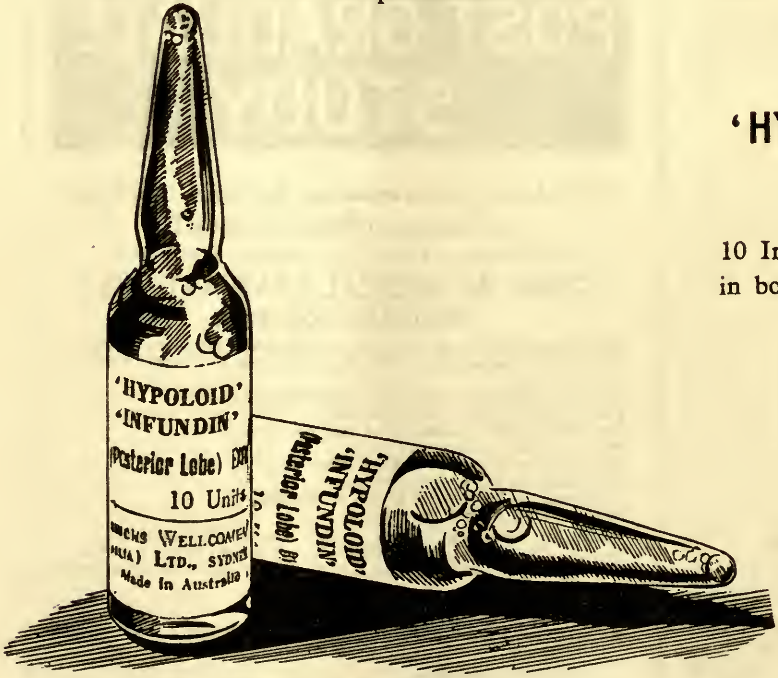
M.J. of A.

'INFUNDIN' BRAND

PITUITARY (POSTERIOR LOBE) EXTRACT

Where pituitary extract is indicated, there is no room for doubt or guesswork; successful therapy depends upon a definite, precise response to a given dose. That is why 'Infundin' brand Pituitary (Posterior Lobe) Extract is regularly specified by an increasing number of practitioners.

'Infundin' is a product of exceptional reliability, prepared by workers with many years' experience in the technique of its manufacture and standardisation. It shares with all the products of Burroughs Wellcome & Co. a high and jealously-guarded reputation for consistent and dependable activity.


'HYPOLOID'
'INFUNDIN'
(Posterior Lobe) EXT
10 Units
...UGHS WELLCOME
...ALIA) LTD., SYDNEY
Made in Australia
'HYPOLOID'
'INFUNDIN'
(Posterior Lobe) B

'HYPOLOID' TRADE MARK 'INFUNDIN' BRAND

Pituitary (Posterior Lobe) Extract

10 International Units per c.c. — 0·5 c.c. and 1 c.c., in boxes of 6, 25 and 100 ampoules.

BURROUGHS WELLCOME & CO.
(AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

ASSOCIATED HOUSES: LONDON NEW YORK MONTREAL
CAPETOWN BOMBAY SHANGHAI BUENOS AIRES

The Medical Journal of Australia

SATURDAY, FEBRUARY 9, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

OVERSEAS TRAVEL FOR AUSTRALIAN STUDENTS.

In the course of an address delivered before the British Medical Association at Montreal in 1897 under the title "British Medicine in Greater Britain", the late William Osler said that in certain aspects the "Australasian Settlements presented the most interesting problems of Greater Britain". He used the following words: "More homogeneous, thoroughly British, isolated, distant, they must work out their destiny with a less stringent environment, than, for example, surrounds the English in Canada. The traditions are more uniform and of whatever character have filtered through British channels. . . . What the maturity will show cannot be predicted, but the vigorous infancy is full of crescent promise." That was nearly fifty years ago. Those who have lived in the world of medicine during this period have been rarely privileged; they have seen many discoveries and have watched their application in the fight against disease and the alleviation of human suffering; they have witnessed a reawakening in the value of research and its intensified pursuit in every branch of medical science; and unless they have been quite torpid, they have probably helped to bring about a widening of outlook and the placing of fresh emphasis on such aspects as the mental action and reaction in bodily disease and the varied problems of sociological medicine and other avenues of preventive medicine. This means that they have been taking a part in the evolution of science in relation to man, and this, it must be remembered, is bound up with the social evolution which is even now taking place, and has been in progress for the last few centuries. Osler pointed out that evolution advanced by such slow and imperceptible degrees that to those who were part of it the finger of time seldom seemed to move. Even the great epochs, he held, were seldom apparent to participators. None of those who have been engaged in the practice of medicine during the last fifty years can have failed to be conscious of its recent developments; they probably realized that the changes would be far-reaching, but many could not or would not see them as part of an orderly evolutionary process. This last fact, incidentally, is one of the great difficulties in the making of plans for the future in either the medical or social sphere. Confining our attention for the moment to the sphere of medicine, we should probably be correct in the contention that development in what Osler called the Australasian Settlements has been much as he would have expected it to be. Osler spoke in Montreal, a city of two languages, French being spoken as well as English because so many of the people are French Canadians. The words "more homogeneous" applied to Australia are therefore justified. Medicine in Australia has also been thoroughly British—the early teachers in Australian medical schools were trained in Britain and they have left the British stamp on the Australian-born teachers who have succeeded them. The words "isolated" and "distant" do not apply with the same force today as they did in 1897. In the past if Australia did appear to be a step behind in the adoption of some scientific advance perfected in Britain, on the Continent of Europe or in America, the lag was probably occasioned by distance or isolation. During recent years distance has for most practical purposes been almost eliminated, but isolation is a potential danger and measures must continually be taken to guard against it. Isolation is not caused only by distance separating centres of activity or persons from one another; it may be the result of subtle factors of mind and possibly of habit.

In the pursuit of medical science, the student, that is, the practitioner, who cuts himself off from scientific collaboration and discussion with his fellows, however self-sufficient he may think himself to be, faces a life of deprivation and his atrophy must after a shorter or longer period of time become apparent. But there is another side to the picture. If we suppose that every practitioner makes the best possible use of his facilities for scientific advancement and that the medical community is united in its scientific endeavour, something will still be lacking. No scientific community can thrive in isolation, particularly if it is young; stimulating infusions from other scientific communities are needed from time to time. Stimuli may be received in various ways, but the one on which we wish to lay stress is the paying of visits to other countries by individual practitioners. In the early days of Australia medicine was indeed "thoroughly British". Australian medicine is slowly building up its own tradition, but it is still largely influenced by British medicine and the influence has been to a great extent absorbed by individual practitioners in their individual comings and goings rather than by groups of persons. Central Europe and latterly America have also attracted the medical traveller. While on the one hand it has for many years been almost looked on as essential for a practitioner to study on the other side of the world if he wished to specialize in a particular branch of medicine, sound arguments have lately been advanced in favour of the provision of means by which special skill may be acquired within the borders of the Commonwealth. This is a condition which should be made possible for all the specialties. It would, however, deprive the future specialist of the enormous benefit that can be gained from overseas travel and study. In any case practitioners other than would-be specialists are no different from the latter in their ability to benefit in this way. In the past medical practitioners seeking to enlarge their experience overseas have had to travel at their own expense and in many cases have had to save from their earnings to gain the money needed. At the present time with the high cost of living and the excessive burden of taxation it appears that very few practitioners will be able to save for this purpose and the only people able to spend time at clinical schools in the old seats of learning will be those possessed of inherited wealth. If this state of affairs does arise it will be a serious loss to individuals, but this loss will be thrown back onto the community—the community always suffers in the long run if anything is allowed to happen which lowers the efficiency of its servants. There are several ways in which the situation may be met. One would be by the making of reciprocal arrangements with teaching hospitals in Great Britain and America for the establishment of resident posts to be held for a period by overseas graduates. Another method that might be considered would be the creation of travelling fellowships by the extension of the present scheme by which the fees of certain students with living allowances are met by the State, the students most likely to profit being selected after exhaustive inquiry into every aspect of their qualifications and attainments. Some young graduates might be able to find appointments overseas if nothing more than the cost of travelling was provided. The travelling fellowships established by the Nuffield Foundation, the Rockefeller Foundation and the Carnegie Trust, and advertised recently in this journal by the National Health and Medical Research Council, are valuable, but they cover only a short period and are intended more especially for those likely to be engaged in clinical teaching.

Medicine is not the only sphere in which the provision of overseas experience for young Australians will be useful to Australia in the future. The Chancellor of the University of Melbourne, writing in the *University Gazette* of May 24, 1945, outlined a proposal for the establishment of travelling scholarships between universities in Britain, America and Australia as a means of dispelling the ignorance displayed by the people of one country of the ways of life and thought of another. He holds—and many will agree with him—that this ignorance is one of the causes of international misunderstanding. If the world is to live at peace in the future, the peoples of the different nations will need to understand and to trust one another. Australia has seen a good deal of American and British service men during the last few years. The friendships that have been made, the trust that has been engendered, are worth fostering. The Chancellor mentioned the design of Cecil Rhodes who founded the scholarships known to all Australians. He thinks that a somewhat similar design might be adopted by Britain, America and Australia. This is a statesman-like suggestion that should be given serious consideration by the Commonwealth authorities.

On the medical side we think that a body such as the Federal Council of the British Medical Association in Australia should appoint a subcommittee to report on the matter. When this has been done, the question will have to be further pursued. It is really part of post-graduate education and both it and the proposal made by the Chancellor of the University of Melbourne ought to be dealt with when other post-war educational matters are considered. On a previous occasion we expressed the opinion that a Royal Commission on Education should be constituted as a post-war measure; the time is ripe for this to be done.

Current Comment.

THE PREVENTION OF INFLUENZA.

The threat of epidemic disease has throughout the ages followed in the wake of war. Indeed as Zinsser writes: "Armies have crumbled into rabbles under the onslaught . . . of dysentery and typhoid bacilli"; so that in the technique of what we are pleased to call "modern" warfare, the anticipation and prevention of infection are logical contributions to victory.

Early in the war the Office of the Surgeon-General United States Army set up in its Preventive Medicine Service a Commission on influenza under the direction of Thomas Francis, junior, and a comprehensive plan was developed for the field trial of vaccination against influenza, in which use was made of the large aggregation of young adults in training centres under reasonably controlled conditions. It was decided to rely on a single injection of concentrated material, timing the inoculations as far as possible to precede an expected outbreak, and to inject alternate subjects with control material of similar volume. The centres of investigation were in Minnesota, Iowa, California, Michigan and New York, and each team of workers have assembled and recorded their results.[1]

The vaccine was prepared from standard strains A and B, and the A virus was composed of equal amounts of strains PR8 and Weiss. The latter was a recently isolated strain from an apparently sporadic case in 1943, and was included in the hope that it might more nearly resemble strains likely to be infective in the community, also because it had been found that it produced good antibody response. Each dose of 1·0 millilitre contained concentrate from 5·0 millilitres of allantoic virus B, and 2·5 millilitres each of PR8 and Weiss, and was injected subcutaneously. Vaccination was carried out in the different centres between October 19 and December 4, 1943, and washings were taken and cultivated for virus during the period; every tenth subject was bled at intervals of ten days, for antibody titre, and in some cases three months later. Virus was first isolated on November 17, although serum antibody rises had indicated that virus was in the various communities earlier, and about this time a sharp rise in the general incidence of respiratory disease was also noticed. In all groups a total of 5,989 persons were vaccinated, and 5,923 received the control injection.

The overall results showed that the incidence of influenza amongst the inoculated was 2% and amongst the controls 8%, so that the vaccine had appreciably affected the incidence of the disease, showing a protective influence from the single dose given roughly eight days before the disease became noticeable. The tests on paired sera from control subjects showed that while there was evidence of influenza A in the community, only in a single instance in the New York series was there a rise in B virus titre of antibody, and no B virus was isolated during the course of the investigation. Findings in the different centres vary, and it is interesting to compare them. In Iowa, where the whole programme of vaccination was not complete when cases began to occur, the incidence amongst controls was five times that amongst the vaccinated, while in California, where six weeks elapsed, the controls showed only twice the incidence shown by the test subjects; here a strain of virus isolated during the epidemic, "Olson", was used as antigen for the hæmagglutination tests, and the antibody demonstrated by its use was a much lower titre than that towards PR8 and Weiss. These diagnostic isolations of virus were carried out by the amniotic method, and in view of the recent demonstration by Burnet and his co-workers of the differences in reactivity in "O" and "D" virus, there may be an explanation of this result.[2] In Minnesota note was taken of the finding that in a vaccinated subject whose paired sera had shown good antibody rise, the later occurrence of clinical infection, proven by virus isolation, did not stimulate further antibody response.

---

[1] *American Journal of Hygiene*, July, 1945.

[2] *The Australian Journal of Experimental Biology and Medical Science*, June, 1945, page 151.

The associated rise of winter respiratory infections was carefully watched; β-hæmolytic streptococci made their appearance, but did not influence the influenza group in any detectable way, while of 11 patients in New York classified as suffering from atypical pneumonia, seven showed definite evidence of influenza A, and were all control subjects, suggesting that the virus could produce pneumonia. The duration of immunity as measured by antibody response was tested as far as practicable up to four months after inoculation, and although there were exceptions, the general level of antibody remained higher than that initially found. As is well known, the subjects with lower antibody showed better rise after inoculation but the level fell again; those with higher antibody level showed less response and less fall.

In the thoughtful discussion contributed by G. K. Hirst and his group[1] it is suggested that the relation of serum antibody and resistance to clinical influenza needs further explanation, and they point out that an increase in the general attack rate would in all probability minimize the value of vaccination. Moreover, the good result obtained in the centre where cases began to occur eight days after completion of the programme indicated a possible optimum time, a finding which could be made useful in further experiments.

In Australia the constant flow of experimental evidence on influenza virus from the Walter and Eliza Hall Institute provokes a keen interest in the results of this large scale experiment. Professor Burnet suggests that the local implantation of virus on the respiratory mucosa may well be an explanation for the lack of influence of high antibody titre. According to this suggestion, the virus becomes attached to the susceptible cell from the situation where the least possible antibody effect can be produced. At the same time his recently described technique to differentiate virus in the "O" phase from the derivative phase of established laboratory strains—difference in hæmagglutinability of fowl and guinea-pig red cells and inability to infect the allantoic cavity—may call for revision of the significance of methods of primary isolation of virus. The usefulness of the practice of giving a single dose of concentrated vaccine to susceptible age groups assembled as in army training camps, however, seems to be well substantiated by the results recorded here.

"THE STEVENS–JOHNSON SYNDROME."

In 1922, A. M. Stevens and F. C. Johnson described "a new eruptive fever associated with stomatitis and ophthalmia".[2] They reported two cases. The earliest symptoms were weakness, and soreness of the mouth and eyes. In a short time purulent conjunctivitis became apparent, and on the third day reddish spots appeared on the back of the neck. The eruption spread until only feet, hands and scalp were free of it.

> The trunk, arms and thighs were thickly set with discrete, oval, brownish purple papular lesions, varying in size from 0·5 to 2 cm. in the longest diameter. A few of the largest spots showed a yellowish, dry, necrotic center. There was no vesicle nor pustule formation; no induration about the papule; no areola and the skin between the lesions seemed to be perfectly normal. The forearms and legs showed what seemed to be the more recent lesions. These were less raised, of brownish color, paling somewhat on pressure, and more closely set than were those of the trunk and thighs.

The lips were cracked and bleeding and encrusted; the tongue was swollen, bright red and fissured; and the buccal mucous membrane was "inflamed with small bullous lesions which rapidly broke down, leaving a raw and angry surface". The eyelids were œdematous. Thick pus streamed from the palpeberal fissures. One patient was blinded; the other was left with a corneal opacity. One patient's spleen was palpable. It is of interest to note that his tonsils had been removed a few months previously and that he had been in hospital for fourteen weeks thereafter suffering from fever and splenomegaly and that *Staphylococcus aureus* had been cultured from the blood. The course of the illness was that of a severe and protracted fever. The leucocyte count was low at the height of the illness. In one case a pure culture of *Staphylococcus aureus* was obtained from a necrotic lesion. No other significant bacteriological findings were recorded. Stevens and Johnson presented strong arguments in favour of their view that it was a separate clinical entity. Since their report a number of cases have been recorded under such names as "*erythema multiforme bullosum* with involvement of mucous membranes of eyes and mouth", "*erythema multiforme exudativum* with ophthalmia and stomatitis" *et cetera*. The latest report comes from Simon Kove, a medical officer of the United States Army.[1] His two patients were young men. The first suffered from membranous stomatitis, purulent conjunctivitis and inflammation of the urethral meatus; but he had no exanthem. Sulphadiazine was given early. The temperature subsided by lysis and reached normal by the sixth day. The oral mucous membrane had sloughed away by the tenth day, and by the seventeenth day the mouth was normal. The occular discharge ceased on the seventh day; but conjunctivitis persisted till the seventeenth day. The second patient's illness was severer and more prolonged. It commenced with parotitis. Numerous vesicular and erythematous lesions appeared. Sulphadiazine and penicillin were given. In each case the leucocyte count was raised (10,000 to 14,000 per cubic millimetre) at the commencement of the illness, but remained below 10,000 thereafter, and in the second case was as low as 5,800. Kove, bearing in mind the second patient's mumps, suggests that a virus may be the causal agent.

The main and possibly the primary lesions in this syndrome are stomatitis and conjunctivitis. The exanthem appears to be secondary; possibly it occurs only when infection of the blood stream is heavy. Perhaps the early administration of sulphadiazine was sufficient to limit it in Kove's cases. Oral and ophthalmic surgeons and dermatologists should be on the lookout for the disease. Possibly it is not so rare as we have been led to believe.

A NEW YORK FESTSCHRIFT.

The issue of the *Journal of the Mount Sinai Hospital*, New York, for May-June, 1945, is dedicated to Dr. Eli Moschowitz on his sixty-fifth birthday. It is said of Dr. Moschowitz in a foreword that no member of the staff of the Mount Sinai Hospital in this generation has commanded the respect and devotion of his associates in quite the same degree, and he is described as "physician, scientist, scholar, traveller, epicure, bibliophile, magician and lover of music and the arts". He has been a prolific and versatile writer in the field of clinical medicine. His monograph on the hyperkinetic diseases was the subject of comment in this journal on February 26, 1944. Dr. Moschowitz's latest monograph on "The Biology of Obesity" might well have application to the special number of the *Journal of the Mount Sinai Hospital*, for instead of the usual slender publication it is a stout volume of 814 pages. It is "healthy fat", however, and may well give much pleasure to the recipient. Among many interesting contributions are articles on cup-shaped nipples as a stigma of infertility, by R. T. Frank; on the continuous immobilization of the chest and diaphragm in the treatment of pulmonary tuberculosis, by A. L. Barach; on the relationship of the *arcus senilis* to coronary arterial disease, by E. P. Boas; on the Kenny treatment of poliomyelitis, by A. E. Fischer; on the pathogenesis of atherosclerosis, by L. N. Katz and D. V. Danber; and on a homunculus discovered in a dermoid cyst of the ovary, by A. Plant. There are 75 articles in all.

---

[1] *The Journal of the American Medical Association*, Volume CXXIV, 1944, page 982.

[2] *American Journal of Diseases of Children*, December, 1922.

---

[1] *The American Journal of the Medical Sciences*, November, 1945.

Abstracts from Medical Literature.

SURGERY.

Total Removal of the Pancreas and Other Organs and Tissues.

A. Bruschwig, J. T. Ricketts and R. R. Bigelow (*Surgery, Gynecology and Obstetrics*, March, 1945) report a case of total pancreatectomy, total gastrectomy, total duodenectomy, splenectomy, left adrenalectomy and omentectomy in a diabetic patient, with recovery. The patient was a white male, aged fifty-three years, who was seen first in February, 1944, and was complaining of steatorrhœa, loss of weight and polyphagia. After examination it was decided that he was severely diabetic, and it was found that he required 60 to 90 units of insulin daily. Under treatment he regained 37 of the 50 pounds in weight which he had previously lost. X-ray examinations of his alimentary tract revealed no abnormality. He was discharged from hospital in May, being readmitted three months later with jaundice and right upper abdominal pain. Exploratory laparotomy was performed in September, 1944, and a carcinoma was found in the body and tail of the pancreas, with extension into the stomach and left adrenal gland, and numerous metastases in the greater omentum. The omentum was resected first, and then the stomach, duodenum, pancreas, spleen and left adrenal. Œsophago-jejunostomy and choledocho-jejunostomy were performed. An entero-anastomosis was carried out. The operation was performed in five hours and forty-three minutes, during which time the patient received 2,800 millilitres of blood, and 300 millilitres of saline and 800 of gelatin solution. It is stated that there was no shock at any time, and that the post-operative course was smooth. Details of the management are given. The pancreas when examined showed degenerative insular changes typical of diabetes, and carcinoma arising from duct epithelium. The patient was ambulatory ten weeks after the operation, but then developed metastases within the abdomen and died one month later.

The Use of Heparin in the Abdomen.

F. M. Massie (*Annals of Surgery*, April, 1945) discusses the intra-abdominal use of heparin in the prevention of peritoneal adhesions. He first reviews the work of Lehman and Boys. These investigators administered heparin before closing the abdomen after dividing adhesions, and then by paracentesis every twelve hours for three days; results in fourteen patients were reported. The author has tried a modification of this method in seven cases. All patients had shown a tendency to reform adhesions in number and density far above the average, and to develop intestinal obstruction. He thinks that heparin seems to offer a better outlook in this type of condition than anything used up to now, but quotes and endorses the view of Lehman and Boys, that "the use of heparin should be limited to cases of obstruction due to adhesions, and particularly to cases in which previous operations have been performed for obstruction; in other words heparin should be used only in that group of desperate cases in which one is willing to accept the hazard of an insufficiently tried method in preference to a future risk of significant proportions". The one important and essential contra-indication is the presence of an oozing peritoneum after adhesions have been divided, and heparin should not be used when granulation or subacute inflammatory tissue is present. Minor dangers attending the use of heparin are infection and delayed wound healing, but the chief danger is hæmorrhage. Blood coagulation and bleeding time should be estimated, but the author has obtained better guidance from clinical observation, together with estimations of blood pressure and hæmoglobin. Should hæmorrhage occur, it can be checked by blood transfusion and by discontinuance of the heparin, but this will mean abandoning the attempt to prevent the reestablishment of adhesions. The author reports seven cases in which heparin was used intraperitoneally.

Succinylsulphathiazole and Phthalylsulphathiazole in Colon Surgery.

E. J. Poth (*Surgery*, June, 1945) discusses the value of succinylsulphathiazole and phthalylsulphathiazole (referred to briefly as "sulphasuxidine" and "sulphathalidine") in the preparation of the colon for surgery. Both drugs lower the count of coliform organisms in the fæces very considerably, but there are some differences between the two drugs; the former will reduce the count to about 100 organisms per gramme of fæces, and cause the stools to become semifluid, small in bulk, mucoid and relatively odourless. Sulphathalidine is more effective in reducing the colonic flora, but the fæces become tenacious and stringy, and there is less efficient mechanical emptying of the bowel unless enemata and purges are used. Sulphathalidine is the more effective drug in the presence of diarrhœa. Average dosages are 3·0 grammes every four hours for sulphasuxidine and 1·5 grammes every four hours for sulphathalidine. Among several thousand patients there has been one fatality, which was due to agranulocytosis. Some minor toxic effects are described, and the author points out that there is a possibility, through misunderstanding, that the patients may be given sulphathiazole when succinylsulphathiazole has been ordered. The larger dosage renders such an error dangerous. An occasional patient with an ulcerating condition of the colon shows an increased tendency to bleeding while being prepared with sulphasuxidine. For routine pre-operative preparation a saline purge is first administered and the patient is then put on a diet with a high protein content and a low residue. One or other of the drugs is given, in the dosages mentioned above, for a period of seven days. If an anastomosis has been performed, the drug is continued after operation. Poth concludes that sulphasuxidine and sulphathalidine help to bring about a satisfactory bacteriological and mechanical preparation of the bowel for surgical operation. With the proper alteration of bacterial flora, the preservation of blood supply by the avoidance of tension and the proper placement of sutures become more important than the chance soiling of tissues by the modified contents of the bowel. The drugs, when properly used, contribute to a lowering of operative mortality, and make an occasional procedure possible which might otherwise not be feasible.

Local Treatment of Burns.

E. C. Reese (*The American Journal of Surgery*, March, 1945) reports his experiences in the treatment of 39 cases of burns. Local treatment consisted of the application of a transparent film with a methylcellulose base, and containing 20% of sulphanilamide and 10% of sulphacetamide. Before application of the film the burned area was cleansed with neutral soap, strict aseptic precautions being observed. Pressure dressings were applied over the film, and were removed after four or five days to permit inspection of the burn through the film. The film was not removed until healing was complete, unless any portion had become macerated. This was then replaced by new film. General supportive measures were also employed. The author found the results were satisfactory and the patients very comfortable. He considers that the method is deserving of wider use.

The Causation of Shock.

Dallas B. Phemister and Carl H. Laestar (*Annals of Surgery*, June, 1945) discuss the causation of surgical shock. Working on the theory that nerve stimuli from the site of injury or operation produce shock, they have made attempts to prevent shock by nerve block. Swingle and his co-workers deduced that a flow of nociceptive nerve stimuli from an area subjected to trauma played an important part in the production of shock, and that if spinal anæsthesia was used the incidence and severity of shock were greatly reduced. The authors refer to a series of experiments on dogs by Swingle and his co-workers, designed to test theories as to the effect of trauma in producing shock. The animals were anæsthetized with ether, and then a 2% solution of procaine was injected at the level of the third or fourth lumbar vertebra, the amount varying with the weight. Both hind legs were subjected to trauma with a mallet, after which the ether was withdrawn and the spinal anæsthesia continued. The authors arranged a further series of experiments to determine how much of this reported protection against limb trauma was due to blockage of sensory nerves preventing the flow of presumable nociceptive stimuli from the field of trauma and how much due to the block of vasomotor and motor nerves with resultant temporary fall in blood pressure reducing the amount of hæmorrhage. The technique of the authors' own method is described and detailed tables of the results are set out. No evidence was obtained from these limb trauma experiments either that a flow of nociceptive stimuli from the injured field or that toxin formation is an important contributing factor in the initiation of any circulatory impairment or shock which followed. The animals in which the trauma was applied soon after the administration of spinal anæsthesia were protected from shock principally by the blockage of the vasomotor and motor nerves, which

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED

Chemotherapeutic Research

CHEMOTHERAPY is based on the fact that certain synthetic chemical substances influence specific organisms of disease. The search for new and improved chemotherapeutic drugs is engaging the attention of research workers all over the world and not least those of Imperial Chemical Industries.

In recent years the chemotherapy of bacterial diseases has largely been influenced by the discovery of sulphanilimide. Of the many derivatives produced from this drug, one of the most recent and most important is sulphadimethylpyrimidine, generally known as "sulphamezathine," discovered by the Research Department of Imperial Chemical (Pharmaceuticals) Limited.

"Sulphamezathine" brand of Sulphadimethylpyrimidine has the advantages of being less toxic and more freely soluble than many other sulphonamides. It is of particular value in the treatment of primary and secondary Pneumonia, meningococcal, pneumococcal and streptococcal Meningitis, Haemolytic streptococcal infections and Bact. coli infections of the urinary tract. In a recent review of the sulphonamides in the British medical press it was stated that "Sulphamezathine" appears to be, at present, one of the most promising sulphonamides for general clinical application. Imperial Chemical (Pharmaceuticals) Limited have also been closely associated with the early production of Penicillin, following Sir Howard Florey's great work on Sir Alexander Fleming's original epoch-making discovery. The first substantial quantities of this natural drug to be made available for biological and chemical investigation in Great Britain were produced in the Company's research laboratories. The chemistry of Penicillin continues to be the subject of close study with a view to its eventual synthesis.

Tropical diseases form another extensive and important field of research. The pioneer work leading to the present vast production of mepacrine and pamaquin in Great Britain and other Allied countries was carried out by British chemists.

Imperial Chemical (Pharmaceuticals) Limited is represented in Australia by I.C.I. of Australia and New Zealand Limited, to whom all enquiries should be addressed.

"AVLON" TRADE MARK

IMPERIAL CHEMICAL INDUSTRIES OF A. & N.Z. LTD.

ORGANICS PRODUCTS DIVISION . 408 LATROBE STREET, MELBOURNE

ALSO AT SYDNEY AND BRISBANE

10 PM-GH

Maison Marnay

★ ★ ★

Brandy

A PENFOLDS WINES PRODUCTION

MOIST HEAT

IN THE TREATMENT OF

BOILS AND CARBUNCLES

THE moist heat of an ANTIPHLOGISTINE pack plus its hygroscopic and osmotic action are of definite value in the treatment of boils and carbuncles.

Applied comfortably hot the moist heat of ANTIPHLOGISTINE is maintained for many hours. Pain and soreness are lessened and the local reparative processes are stimulated.

ANTIPHLOGISTINE may be used with chemo-therapy.

Antiphlogistine

Made in Australia

The Denver Chemical Manufacturing Company

78 Liverpool Street, Sydney

Antiphlogistine
LARGE SIZE
KEEP THE LID ON
Antiphlogistine
MADE BY
THE DENVER CHEMICAL MFG. CO.
SYDNEY
FOR SALE BY ALL CHEMISTS

greatly lowered the blood pressure and limited the hæmorrhage to an amount that was too small to produce shock, instead of by the blockage of afferent impulses. The maintenance of such a low blood pressure by spinal anæsthesia for the prevention of shock during an operation on man is contraindicated, as the amount of anæsthesia required would be too great. In all of the experiments in which shock developed, the local blood loss was large and constituted the outstanding causative factor. There appears to be no indication for the renewal of efforts to prevent shock by the blockage of afferent nerve impulses through the use of local or spinal anæsthesia. Indications for the use of local or spinal anæsthesia in shock are based on other grounds.

Prophylaxis of Wound Infection.

L. W. PETERSON (*Archives of Surgery*, April, 1945) discusses methods of cleansing wounds as set out in medical literature. Believing that the germicidal properties of soap are unquestionable and that the irritative properties of soap in wounds are neither great nor damaging, the author conducted a series of experiments to establish the superiority of soap and water over other means of cleansing wounds. He allowed a culture of pyogenic organisms to remain in the wound for a definite time; the effects of mixtures of green and white soaps, the effects of scrubbing, the combined effects of scrubbing and soaps and the effects of irrigation with isotonic saline solution were studied. Photomicrographs of biopsy specimens after the various treatments illustrate the article. There is no doubt as to the efficacy of the various soaps as germicidal agents. However, in these experiments, when the soaps were placed in actual contact with the uncontaminated fresh wounds, they produced a definite but slight irritation. This was noted only on microscopic examination; gross examination revealed no difference between control wounds and wounds into which soap had been placed. However, in wounds which were contaminated by a given amount of a culture of *Staphylococcus aureus* placed within their depths and then exposed to soap, there was definite increase in signs of infection over those found in the control wounds not exposed to soap; "green" soap was found more irritating than "white" soap. The harmful effect of mechanical washing of the wounds is in direct proportion to the coarseness of the material used. These experiments indicated that of the various methods studied, the cleansing of contaminated wounds by a gentle irrigation with isotonic solution of sodium chloride is the most effective prophylaxis of wound infection. Contaminated wounds treated by this gentle irrigation healed with less evidence of infection than did control contaminated wounds subjected to no treatment other than closure at the specified time. Best results were obtained by irrigating the wounds with 1,000 millilitres of saline solution with no scrubbing, but with the force of the stream used as the washing mechanism.

Acute Pancreatitis.

JOHN MORTON (*Surgery*, April, 1945) deals with the need for rapid diagnosis of acute pancreatitis. He emphasizes the value of Somogyi's rapid method of estimating the amyloclastic activity of the blood amylase; this test may be reported upon in twenty minutes. The test measures the reaction time, not the reducing power, of the blood diastase. Under normal conditions the pancreas, salivary glands and liver do not contribute to the blood diastase level, but acute pathological changes in the pancreas or salivary gland may cause a temporary effusion from these glands into the blood stream. Aspirated fluid from the peritoneal cavity is useful, and in acute pancreatitis gives high readings. Acute pancreatitis can be diagnosed only very rarely without the blood amylase test. The author quotes a series of diagnoses ranging from perforated ulcer, cholecystitis, empyema of the gall-bladder, to the acute crisis of pernicious anæmia; in all these cases improvement could have been effected by the application of the test. He states that acute pancreatitis must be considered in all cases of sudden severe epigastric pain. The serum amylase test is of the greatest value in deciding if the pancreas is involved. There are two distinct types of acute pancreatitis, acute œdematous and pancreatic necrosis. Acute œdematous pancreatitis can be diagnosed by the serum amylase test and the rapid improvement under conservative treatment. Pancreatic necrosis must be suspected when the patient fails to make improvement within a few days. In acute œdematous pancreatitis operation should be deferred until the reaction has subsided. Acute œdematous pancreatitis is followed by chronic pancreatitis frequently, as is demonstrated at late operation. Pancreatic necrosis is followed in a proportion of those who survive by abscess, diabetes and pseudocysts. Conservative treatment of pancreatic necrosis or pancreatic abscess is disastrous. When diagnosis of either condition is suspected, operation is indicated as soon as the patient can be properly prepared for it. Biliary tract disease should be treated after acute pancreatitis if it has played a part in the onset. Any surgical manipulation about the lower end of the common bile duct or the head of the pancreas is likely to be followed by post-operative acute pancreatic œdema. This can be demonstrated by the amylase test. There is a considerable danger of this in the resection of posterior duodenal ulcer perforating into the pancreas. It carries a mortality which should be taken into consideration in any series of duodenal ulcer resections. The author's case reports were selected to illustrate points made in this discussion.

Dermoplasty of War Wounds of the Lower Part of the Leg.

J. F. PICK (*The American Journal of Surgery*, July, 1945) describes a method of covering areas denuded of skin after excision of diseased soft parts and bone. The author claims that eight to ten months' time is gained in the management of severe injuries of the lower part of the leg and that the results are better from the functional, anatomical and cosmetic points of view. The basis of the method is the combination of the double pedicled flap, with a reduction in the circumference of the leg, and the secondary use of full thickness skin over the small residual surgically created area. The method is applied to the management of compound fractures of the leg by the open method. Great care is taken in the pre-operative treatment by means of scrubbing and irrigation with Dakin's solution coupled with packing, keeping the wound moist, and the use of general measures to produce an aseptic field. The first step in the author's method consists in taking an exact copy of the defect by means of an X-ray film cleaned of its sensitized coat. After it has been cut accurately on the wound surface, the pattern is turned to one side or the other to see which offers the best tissue. The whole of the affected soft parts are then excised, care being taken to avoid disseminating any of the debris into the surgically uncontaminated areas around and underneath. Any bone protruding into the wound is excised with the soft parts to avoid leaving excrescences under the flap. This may leave a very deep defect quite unsuitable for ordinary skin grafting. It is of no consequence that only tendons and bone appear in the bottom of the wound. An important and necessary step in cutting the flap by a single incision approximately parallel to the long axis of the limb, is to cut only half-way through the fat, and then to separate the fat into two layers. This separation is carried out by sharp dissection under the whole of the flap and under its upper and lower extremities. The fat remaining is now fashioned into fat pedicle flaps to cover the underlying bone and tendon *et cetera*. The double pedicled flap is now moved over the defect. To reduce the new raw surface produced by moving the flap, the author sacrifices some of the undisturbed fat over the muscles. In two of the author's cases the whole of the lower part of the leg was stripped of fat, so that it was possible to close the wound without any subsequent skin grafting. The areas left on each side of the flap are then covered with full thickness grafts. Two punctures are made in the skin to permit drainage from the most dependent part. The dressing is done by covering the whole area with 3% scarlet red ointment; over this is placed a layer of cotton wool moist with saline solution, and over this dry cotton wool. Care is taken not to apply too much pressure. The leg is elevated and the whole dressing is left undisturbed for fourteen days.

The Metabolic Changes after Burns.

J. W. HIRSHFELD *et alii* (*Archives of Surgery*, April, 1945) report the results of the investigation of loss of nitrogen by 23 burned patients. The intake was carefully compared with loss by way of vomitus, fæces, urine and wound exudate. All patients excreted large quantities of nitrogen in the urine, and, except for a few who received large quantities of carbohydrate and protein, lost considerable weight. It was possible to prevent or to decrease a negative nitrogen balance by feeding with diets high in calorific value and protein content. These diets, however, were poorly tolerated during the first few days after injury. Most burned patients suffer from anorexia and will not consume an adequate diet, hence after the stage of shock has passed special care must be taken to ensure that they eat sufficient food to maintain proper nutrition.

Medical Societies.

OBSTETRICAL SOCIETY OF THE WOMEN'S HOSPITAL, MELBOURNE.

A MEETING of the Obstetrical Society of the Women's Hospital, Melbourne, was held on May 16, 1945, at the hospital, **DR. ELLIOTT TRUE** in the chair. The meeting took the form of a symposium on the conduct of labour by members of the obstetrical staff of the hospital.

Symposium on Labour.

Uterine Pains in Labour.

DR. W. I. HAYES discussed pains in labour. He said that labour was the extrusion of the child from the uterus and vagina until its complete expulsion into the outside world. When this was progressive and effected by a succession of normal uterine and abdominal contractions, the labour was normal, even though an abnormal presentation or fœtal mechanism might be present. It was important to realize that there was an intimate relationship between the pains and the progress of the child. When progress was normal, the pains were normal, and conversely, when pains were normal, normal progress was taking place. Thus, there were two criteria by which a labour might be judged—first, the progress of the child, and secondly, the pattern of uterine activity; but of the two, the latter was the more delicate, became evident earlier, and was therefore the more important.

Dr. Hayes then said that uterine contractions during labour varied in rhythm, in duration, in intensity and in character, according to the stage of labour at which they occurred. Each contraction slowly increased to an acme of height, which was maintained for a certain time, and then the contraction slowly subsided. During the stage of taking up or shortening of the cervix, the pains lasted three to five seconds, recurred at intervals of fifteen minutes to one hour, and were usually felt solely in the abdomen; but during the stage of cervical dilatation, the pains lasted twenty to twenty-five seconds, recurred every three to five minutes, and beginning in the back, passed round to the front. In the second stage of labour, the stage of descent or expulsion, the uterine contractions lasted forty to fifty seconds, recurred every five to seven minutes, were typically "bearing down" in character, and were assisted by voluntary contractions of the abdominal musculature. In every case, the labour pains should be studied from time to time, to determine whether they conformed to the normal pattern. The patient must be asked to notify the onset of a contraction, the uterus should be palpated, the demeanour of the patient should be closely observed, the duration of the complete contraction should be ascertained by timing with a watch, and then the onset of the next contraction should be awaited, so that the interval between pains might be known. If the patient was in a certain stage of labour, and had the type of contraction corresponding to that stage, then the labour was normal and normal progress was taking place; but if the pains characteristic of one stage occurred outside that stage—for example, if second-stage pains appeared before the cervix was almost fully dilated, or first-stage pains occurred during the stage of expulsion—then the labour was abnormal, and progress was not taking place. Except in the rare instance of true uterine inertia, the character of the contraction always reflected the progress of the child against the resistance offered to it by the pelvis and birth canal.

Dr. Hayes went on to discuss abnormal labour pains, in contrast with those of normal labour. He said that true uterine inertia, the cause of which was still unknown, was attended by infrequent, short, weak and ineffective contractions, which were present throughout all stages of the labour. Primary uterine inertia was due either to a reflex spasm of the circular muscle of the cervix, from apprehension or fear, or to lack of pressure by the presenting part on the internal os, as in disproportion, full bladder, *placenta prœvia et cetera*. In each case, the pains at the onset of labour were vague, infrequent and irregular. Secondary uterine inertia, though usually but erroneously thought to be the result of uterine fatigue, was initially due to obstruction to the child's progress. Hyperactivity of the uterine action, giving rise to contractions which were stronger, longer and more frequent than normal, and which were likely to lead to a state of impending rupture of the uterus, was also the result of obstruction; but in this case, the child was attempting to pass through a partly dilated cervix, and this provided the stimulus which intensified the forces of labour. In precipitate labour, the contractions during the first stage gave rise to little or no pain, and the acceleration of the second stage followed from a combination of reduced resistance with an overwhelming desire to bear down. In conclusion, Dr. Hayes said that for many years the mechanical factors of labour had been unduly stressed at the expense of the physiological factors. It was hoped that, in future, more attention would be paid to the latter, and that their importance would be more fully appreciated.

The Progress of Labour and Palpation.

DR. J. W. JOHNSTONE said that he wished to turn attention from the physiological forces of labour, or engines of delivery, to the purely mechanical side—how the fœtus was moving along the birth canal, and the clinical determination of the progress of labour by external palpation.[1] Except in cases of gross cephalo-pelvic disproportion, it was not possible to predict the outcome of labour until the process was well established. In the complex physiological mechanism of labour, the uncertain factors were the strength of the pains, the relaxation of the pelvis, the moulding of the head, the altered disposition of the soft parts, and the physical and mental fortitude of the patient. Although preliminary warning signals of impending disaster might be present, every labour became more or less a test of labour. As Hippocrates himself had said: "Experience is fallacious and judgement difficult." Dr. Johnstone pointed out that the putting of the fœtal head through the pelvis had not the same mathematical precision as the passing of a marble through a wedding ring, in which case it went through or it did not. The pelvis itself was moderately fixed, but by no means circular. The all-important plane of the inlet was inclined at 55°, with the forward-projecting but inaccessible promontory not much below the navel, so that the head passed down and back into the bed. Although buried in the substance of the *mons Veneris* and obscured by the origin of the rectus muscle, the *symphysis pubis* was the outstanding landmark on palpation of the pelvic brim. Its sloping surface formed the whole anterior wall of the bony pelvis. It was the arch or bridge under which the head must ride. Dr. Johnstone, referring to the fœtal head, pointed out that this was unlike the marble, in that it was compressible in substance and ovoid in shape. The general contour of the occipital pole was spherical, the sub-occipito-bregmatic and biparietal diameters each being three and three-quarter inches. Projecting forward out of this occipital sphere, and lagging behind it in the flexed head, was the sincipital sphere, slightly less in diameter. The main art in obstetrics was to estimate the disposition of this ovoid body with respect to the sloping upper pelvic strait. Some would say that this was about as satisfactory as playing snooker on a tilted table and using elliptical billiard balls.

The terms "attitude", "lie", "presentation" and "position" of the fœtus relative to the mother were familiar to everyone. Dr. Johnstone said that he wished to draw attention to another relationship, even more important but not so generally understood. This was first described by Müller as the station of the fœtus—the level of the presenting part, its degree of engagement, how far it had descended on the curve of Carus—in other words, its relationship to the symphysis. It was usual to speak of a floating head when the head was freely mobile above the inlet. In the *multigravida* the head often remained high until the cervix was well dilated and the membranes ruptured. When present in a *primigravida* at the onset of labour, floating head was a warning signal of possible disproportion, as lightening and fixity usually occurred some weeks before. The head was said to be becoming fixed when moderate pressure would not displace it, but the biparietal diameter had not yet passed the region of the inlet. It was engaged when its greatest horizontal plane, passing through the parietal bosses, had passed the plane of the inlet.

Referring to palpation, Dr. Johnstone said that one had to ask what landmarks there were on the fœtus by which descent could be judged. Descent of the fœtal heart sounds provided only a vague and unreliable estimate. The anterior shoulder was the only point sufficiently defined on the fœtal body to be used as a landmark. When the head was completely above the brim, it was four or five inches over the pubis, and when fully engaged it was about two inches above the pubis. After anterior rotation it approached the mid-line while descending. It was the fœtal head, however, that provided the main estimate of descent and disproportion, and the methods used were the first and second pelvic grips and their modifications. In performing the first pelvic grip, it was best to begin by palpating the *symphysis pubis* and its upper margin. The ulnar border of the right hand was then placed on the pubis and a wide grasp of the head was taken in the spread hand. Its ovoid contour, with the forward-projecting and upward-lagging sincipital protuberances, was determined. This sincipital pole would lie to one or other side of the pelvis and to the back or front according to position. In the flexed head the sinciput was the last to disappear, and in posterior positions its projection forwards over the pubis was likely to lead to an erroneous diagnosis of disproportion. This first pelvic grip of Pawlic could also be used to determine fixity, by rocking the head from side to side. Again, by reversing the grip and holding the head down on the brim with the left hand from above, it was possible to estimate overhang over the pubis. The second pelvic grip was performed by turning to face the patient's feet, and by sinking the fingers into the iliac fossæ, it was possible further to palpate and outline the head and to rock it from side to side, in or over the brim. The grip could also be modified, as described by Müller and by Windeyer, to determine disproportion and overlap. If the head was pushed down onto the pubis and back onto the promontory, a "sighter" could be taken with the fingers from the most forwardly projecting portion of the head onto the pubis. It was well again to remember the inclination of the brim, and to recollect that the head therefore went down and back into the bed. When the sinciput had disappeared from deep palpation in the iliac fossa, one could begin to feel for the emerging head by deep palpation through the soft tissues of the ischio-rectal fossa lateral to the vulva. In the labour ward post-anal palpation was preferred. The patient was turned on her left side and the parts were covered with a towel, and during a contraction the fingers were pressed slowly and deeply into the tissues behind the anus and in front of the coccyx. When the firm resistance of the head could be felt from below, the end of labour was usually in sight. Later the perineum would bulge during a contraction, the anus would begin to open, exposing a length of its red anterior wall, and then the hairy scalp would part the pillars of the labia as the head was crowned.

---

[1] Dr. Johnstone's discussion was illustrated by a number of lantern slides.

Dr. Johnstone said that by using these methods of external palpation, which could be often repeated and carried no risk, it was possible to determine the clinical progress of labour, and in most labours to dispense with internal examination. While undoubtedly vaginal examination provided much additional data, particularly with regard to the dilatation of the soft parts, in normal labour vaginal examination should be resorted to only when there was doubt about continued advance. The important question of what was the station of the head had to be asked many times in every labour—such questions as how much of the head was still above the pelvic brim, had the critical point been reached, and whether the parietal bosses had passed the *conjugata vera* with the lowermost level of the head at the ischial spine plane. It was this ability to recognize the changing station or progressive descent of the head which constituted a great part of obstetrical art. Conversely, it was the inability to recognize the lack of advance in spite of good contractions which distinguished the blind midwife from the truly observant accoucheur.

Analgesia in Labour.

DR. W. M. LEMMON discussed the relief of pain in labour. Dr. Lemmon said that it was almost a century since Sir James Simpson, in 1847, used ether for that purpose and subsequently replaced it by chloroform. In 1902 von Steinbuckel introduced the combination of morphine and scopolamine, and this was the commencement of a long list of drugs and combinations of drugs which were used to alleviate the suffering of the parturient. Kotz and Kaufman in 1944 had reviewed the methods in current use in American clinics, and had found that in spite of individual variations there were six basic methods: (*a*) the use of paraldehyde; (*b*) the rectal use of an ether in oil mixture; (*c*) the rectal administration of "Pentothal Sodium"; (*d*) the use of morphine and scopolamine; (*e*) the use of the barbiturates; (*f*) continuous caudal anæsthesia. A surprising omission from this list was the use of chloral hydrate in combination with potassium bromide, which had been found most useful in the early stages of labour.

Discussing paraldehyde, Dr. Lemmon said that, given rectally or orally, it resulted in satisfactory analgesia and amnesia in 85% or more of cases if it was used in combination with morphine or barbiturates, but was not nearly so useful alone. Rosenfield and Dividoff in 1935 used paraldehyde in combination with "Nembutal" in a series of 300 cases; but the dosages used—six to thirteen grains of "Nembutal" and six to twelve drachms of paraldehyde—were much above what was now regarded as safe. Kotz and Kaufman used it also with morphine, the average dose being 11/60 of a grain of morphine and 17·5 drachms of paraldehyde. The nauseous taste and odour of paraldehyde limited its usefulness when given by mouth, and rectal administration of analgesics was not favoured in Melbourne because of soiling of the field and the tendency to proctitis. In spite of this, paraldehyde was one of the least toxic of drugs, with a large margin of safety between the therapeutic and toxic doses, and it justified more extensive employment than at present.

Dr. Lemmon went on to say that the rectal administration of oil and ether mixtures in combination with barbiturates or morphine and scopolamine, as suggested by Gwathmey, was credited with satisfactory results, but had not been used to any extent in the Women's Hospital. Special supervision was necessary, and this limited the usefulness of the method. "Pentothal Sodium" given rectally had been reported on with favour, especially for *multiparæ*, but the method had not been used in the hospital. Morphine and scopolamine, the first of the analgesics employed, although suffering at times a temporary eclipse, had stood the test of time. Experience in the method was necessary for good results, but when this was present, it was most satisfactory for *primigravidæ*, the duration of whose labour was such that the child was unlikely to be born within four hours of the initial injection. If it was born within this time, the depression of the fœtal respiratory centre by the morphine was sufficient to cause concern in the resuscitation of the child. Experience would indicate that the greatest danger lay between one and three and a half hours after the injection of morphine, and this greatly limited the usefulness of the method for *multiparæ*.

Dr. Lemmon went on to describe what he considered the most useful routine. Early in labour, chloral hydrate and potassium bromide, thirty grains of each, were given by mouth. When the cervix had been taken up and the os was beginning to dilate, hyoscine compound A or B was given, according to the estimate of probable progress. Two hours later one two-hundredth of a grain of scopolamine was given, and this dose was repeated every two hours or less often if the patient did not appear to require such dosage. The room should be darkened, and disturbance of the patient minimized. For this reason memory tests which entailed disturbing the patient twice should be used sparingly. A substitute for such tests, which had been found useful when one was in doubt, was to ask the patient to oppose the two index fingers about six inches in front of the eyes. If this was easily and quickly performed, further scopolamine was required. Various substitutes for morphine in this method had been used from time to time—for example, heroin or "Dilaudid"—without great benefit, although heroin was used much more than morphine as a routine sedative in the hospital. The latest substitute suggested was demerol hydrochloride, which had just become available on the Australian market under the name of "Pethidine". This drug had properties analogous to both the morphine and atropine series, and had apparently little depressant action on the fœtal respiration. Schumann had reported 1,000 cases in which the drugs were given to *primigravidæ* and *multiparæ*, the later receiving the drugs by the intravenous route whenever it was estimated that delivery within two hours was likely. In this series the administration of demerol was repeated with that of the scopolamine at intervals of four hours. Results quoted were satisfactory, and reports from Britain by Gallen and Prescott confirmed this finding. Further experience with the drug should prove of interest.

Dr. Lemmon went on to say that barbiturates had a great vogue in the last decade, and numerous members of the group had been tried; but the most generally useful appeared to be "Nembutal". It had been used alone and in combination with other drugs, notably scopolamine and paraldehyde. Early American reports gave large doses, up to fifteen grains or more, with an initial dose of four and a half to six grains repeated as required; but later reports reduced the maximum total dosage to nine grains. Lundgren and Bruce, in 1940, experimented with "Nembutal" and scopolamine, "Nembutal" and paraldehyde, and "Nembutal" alone, and found the combination with scopolamine the most effective. Their maximum dose was six to seven and a half grains of "Nembutal" with 1/150 grain of scopolamine, which is more in keeping with experience in this country.

Dr. Lemmon then outlined what he considered the most useful method for *primigravidæ*. Early in labour chloral hydrate and potassium bromide, thirty grains of each, were given. When the cervix had taken up and the os was beginning to dilate, three grains of "Nembutal" were given, followed in half to three-quarters of an hour by 1/150 grain of scopolamine. The administration of "Nembutal", one and a half grains, alone or with scopolamine (1/200 grain) might be repeated as required at intervals of three or four hours; but the maximum total dose of "Nembutal" should not exceed seven and a half grains. For *multiparæ*, "Nembutal" might be used in the reduced dosages now employed, as the same depression of the fœtal respiratory centre did not occur as with morphine; but the dosage should be less—for example, one and a half grains as an initial dose, followed in half an hour by another one and a half grains if the effect was insufficient. Scopolamine, 1/150 grain, might be given at any time from one hour after the initial dose. This amount was often sufficient, but another 1·5 grains of "Nembutal" might be given in three or four hours if necessary. This had been found to be a useful routine method of sedation for *multiparæ*.

Dr. Lemmon then said that the barbiturates had certain disadvantages; for example, restlessness and even delirium were noted at times, and certain people were abnormally susceptible to them. But in spite of these drawbacks they were widely used at present, and were still among the most useful analgesics in labour.

Referring to continuous caudal anæsthesia, Dr. Lemmon said that in the last few years continuous caudal anæsthesia had been given an extensive trial in America. Two techniques had been used: (*a*) repeated injections through a malleable needle; (*b*) continuous drip administration through a ureteral catheter inserted through a number 13 gauge needle, the needle being then withdrawn. The solutions used had been "Metycaine", 1·5% in isotonic saline solution, and procaine, 1% in isotonic saline solution. The injection was made into the sacral canal below the dural sac. The amount of solution injected was forty mils, and repeated injections of twenty mils every thirty to forty minutes to maintain anæsthesia were advised. The analgesia was perfect in the majority of cases, but the risks were many, and fatalities and "close calls" had been so numerous that the method had been abandoned in many clinics. The main danger was the injection of the solution into the subarachnoid space, and the suggested safeguards—(*a*) aspiration of the needle prior to injection and (*b*) preliminary injection of eight mils of solution, with a delay to see whether symptoms of spinal anæsthesia ensued—seemed to be uncertain, as fatalities had occurred in spite of their employment. Infection was also a danger, and deaths had been reported. Intravenous injection of the drug, which could not always be avoided, might also prove fatal. The necessity for the constant attendance of a specially trained anæsthetist proved yet another disadvantage. In conclusion, Dr. Lemmon said that Greenhill's final remarks in "The 1943 Year Book of Obstetrics and Gynecology" were worthy of quotation: "At the risk of being called an ultra conservative, I believe that, despite its auspicious start, continuous caudal anæsthesia will not become part of our general obstetric armamentarium."

Anæsthesia in Childbirth.

Dr. G. Simpson gave a demonstration of anæsthetic apparatus. Discussing anæsthesia in childbirth, he said that the pioneer and outstanding personality in this field was Sir James Young Simpson, of Edinburgh, who against great opposition obtained recognition of the case for anæsthesia in childbirth. Not only did Simpson establish the value and effectiveness of obstetric anæsthesia, but he established the right of women to demand relief of pain during labour—a right not now challenged in any quarter. It was the practice in the Women's Hospital for delivery to give anæsthetics to all women. The problem of anæsthesia in labour was one still requiring much research and investigation. There had been too much tendency to regard a half-hearted surgical anæsthesia as being all that was required. The problem was closely bound to that of analgesia and sedatives in labour. It was not practicable to have an anæsthetist continuously present throughout labour, so the problem was concerned with the search for an anæsthetic that could be given by an untrained person, by a midwife, or by the patient herself. The conditions required were: (i) painless childbirth, (ii) no harm to mother or child, (iii) the possibility of administration by an unskilled person. The Midwives Regulations in Victoria gave rather negative assistance. Article 40 made the following statement: "No midwife shall (*c*) administer an anæsthetic to a patient unless under the personal supervision of, and in the immediate presence of a legally qualified medical practitioner."

Dr. Simpson went on to say that the ideal anæsthetic agent and method of administration answering all requirements had not yet been found, but by various surgical anæsthetics and other means satisfactory relief could be given in all but exceptional cases. It was well established, but not satisfactorily explained, that women in labour took anæsthetics well. Anæsthetic death had hardly to be considered, and this allowed for carelessness, which was bad. There was no excuse for commencing the administration of an anæsthetic without proper resuscitation measures available—oxygen, "Coramine", mouth gag *et cetera*.

Referring to surgical anæsthetics in general use, Dr. Simpson first discussed chloroform. He said that this was Sir James Young Simpson's anæsthetic, in use now for nearly 100 years and still in the front rank. It might be given on an open mask or folded towel (rag and bottle method). It might also be given by means of an inhaler. With a Junker inhaler it might be self-administered. When the patient was anæsthetized, she stopped pumping and got no more. It had also been given in capsules, which were broken by the patient and inhaled. The dangers of chloroform were well known. They were (i) acute chloroform poisoning, (ii) delayed chloroform poisoning, (iii) burning of the face from contact with liquid chloroform, and (iv) the danger of post-partum hæmorrhage due to uterine relaxation; moreover, chloroform was not to be used in toxæmia, heart disease or shock, nor was it to be used carelessly, and free air and airway must always be maintained. The advantages of chloroform were: (i) quick, pleasant, easy induction; (ii) quick analgesia, with no struggling in induction; it was particularly useful for patients under sedation with hyoscine; (iii) no mucous secretion; (iv) good relaxation, which was necessary for manipulations—for example, internal version; (v) ease of transport, as small amounts were required; (vi) non-inflammability—it could be used in bedrooms with open fires; (vii) safety of use in pulmonary tuberculosis. For some reason chloroform in Victoria was discredited and seldom used. The hospital was blamed for discouraging its use; but that was not their present teaching. Chloroform was used for all *primiparæ* and for induction of anæsthesia in most cases in the labour ward, except when it was contraindicated. The position was well summed up in the following terms by a special committee of the Royal College of Obstetricians and Gynæcologists appointed in 1933 to investigate the use of analgesics in midwifery:

> Chloroform by any method should not be used by midwives acting alone. This conclusion has been reached with regret, but both immediate and delayed dangers, which are well recognized, occurred in this investigation, and it is not possible fully to guard against such occurrences if the administration is in inexperienced hands.
>
> This finding should not, however, be taken as prejudicing the use of chloroform by registered medical practitioners, who, aware of the dangers, can take precautions to lessen the risks.

Dr. Simpson said that the falling off in the use of chloroform was a mistake and a pity; but its reintroduction would require careful training of those who were now used to pouring on ether *ad libitum* without fear of consequence.

Dr. Simpson went on to say that at present ether was the most used anæsthetic. It was considered safe and foolproof; but although there was little risk of overdose, there were real dangers of post-anæsthetic pulmonary complications. Ether might be given by open mask or by vapourizing machine. Two vapourizers were available—the ether machine and the Oxford vapourizer. These both allowed safe administration by the midwife or by the patient herself. The dangers of ether were mainly due to inhalation of mucus or vomitus. The patient was often badly prepared, not having been starved, and having had no preliminary atropine. She might be "fighting mad" from hyoscine. She was lying in the left lateral position—a bad position for anæsthesia. If massive pulmonary collapse occurred, the correct treatment was immediate bronchoscopy and aspiration of bronchi.

Referring to nitrous oxide, Dr. Simpson said that during the first World War a combination of nitrous oxide and oxygen was established as the safest surgical anæsthetic agent. It was not thought of in obstetrics because of its cost and because of the unsuitability of machines for administration. What was required in labour was an intermittent anæsthetic to be given when the pains occurred. This was provided by the McKesson machine or with the Australian "Austox D.M.". The "Austox" machine had been on the market since about 1930. It was a most satisfactory machine for the administration of nitrous oxide and air or oxygen during labour. Its only disadvantage was lack of portability, due not so much to weight as to the essential awkwardness of its disarticulated parts. In 1932 Dr. R. J. Minnitt, at the request of the Liverpool Maternity

Hospital, had undertaken to investigate means of giving relief for the pains of childbirth. The result of Dr. Minnitt's research was the Minnitt machine, first made available in September, 1933, which allowed self-administration of nitrous oxide and air in a fixed concentration of 45% of gas. Wide publicity had been given to the Minnitt machine and to this method of obstetric analgesia, which until the war was being used extensively in England. In the investigation by the Royal College of Obstetricians and Gynæcologists in 1934, 3,865 cases of anæsthesia by the Minnitt method were included. It was considered that there was no added risk to mother or child, but satisfactory analgesia was claimed in only 77%. However, in a series of 1,025 cases presented by Minnitt himself between 1933 and 1935, 92% of satisfactory results were claimed. The committee of the Royal College of Obstetricians and Gynæcologists in its report concluded that: "Gas and air administration by the Minnitt apparatus is safe and satisfactory, although the apparatus is expensive and gas costly. It is recommended that its use be extended." Dr. Simpson went on to say that while nitrous oxide and air were suitable for analgesia and anæsthesia in most normal cases, the concentration of nitrous oxide given did not allow deep anæsthesia and was inadequate in some cases for normal delivery. It was insufficient for forceps deliveries. After three or four breaths of pure nitrous oxide had been inhaled, analgesia was produced in sixteen seconds. Labour pains lasted for only half a minute to one minute, so to obtain any effect it was most essential to commence the administration of nitrous oxide and air just before the pain started. This required training of the patient. Minnitt advocated training before confinement, so that the mask might be applied to the face and the inhalation commenced without delay. It also precluded the use of other sedatives, which dulled the pain and prevented the patient from making an early start with the anæsthetic. If nitrous oxide and oxygen were used, 5% of oxygen would keep the patient free from cyanosis if only three or four breaths were taken. This mixture, if inhaled at the first indication of pain, would give analgesia and a short sleep after the pain was over. In the second stage the patient should hold the last breath and bear down. It was important to take deep breaths. The percentage of oxygen must be increased if longer periods of anæsthesia were required. When necessary ether might be introduced to deepen anæsthesia. A puff of pure oxygen might be given after delivery fully to oxygenate the baby. The advantages of the method were that it did no harm to mother or baby, and did not slow but in fact quickened labour. It was the best anæsthetic for toxæmic or shocked patients, and was also suitable in pulmonary tuberculosis. While in the analgesic state the mother was fully cooperative, but anæsthesia could easily be deepened as required. The disadvantages of the method were the awkward equipment, the danger that gas cylinders might be empty when required, the fact that the mechanical apparatus might not be understood by the staff, and the cost. Much greater use should be made of gas, and in the larger maternity hospitals the apparatus should be understood by the staff and used more frequently.

Dr. Simpson then said that spinal anæsthesia was not used at the hospital, and he could see no case for its use. Intravenous anæsthesia had only special application—for example, for manual removal of the placenta in severe shock or in tuberculosis. Local anæsthesia had an application in certain cases only, for example, in breech deliveries episiotomy was performed under local anæsthesia so that the full pushing power of the mother might be preserved. The common misuse of anæsthetics was in the giving of too little or too much. In one labour ward there was a text: "My grace is sufficient for thee." This was not appreciated by most patients. Patients were sometimes told by their experienced friends to yell their hardest or they would not get an anæsthetic. That was surely a discredit to obstetricians. On the other hand, an anæsthetic was abused if it was used merely to hold back a normal delivery till the obstetrician could arrive to be a witness. Light anæsthesia was best except for intrauterine manipulations.

Dr. Simpson said that no survey of anæsthesia would be complete without reference to training in relaxation before confinement, which it was held allowed painless childbirth, or to hypnotism, which appeared to be much used in Russia. Hypnotism would seem to hold great attraction at the present time, for it could be administered satisfactorily by telephone. There was thus a wide range of tried and tested anæsthetic agents from which to choose. There were indications, contraindications and dangers. The method of administration and the working of apparatus must be understood by both obstetricians and midwives. Whatever method was employed, the aim was a healthy baby and an undamaged mother, and further, a mother whose comment would be, "How marvellous it is to have a baby"—not, was was often heard, "Never again".

The Management of Labour.

Dr. R. M. Rome dealt with some points in the management of labour and the delivery of the child. He stressed the importance of full instruction of the patient as to what to expect when labour commenced and as to when she should proceed to hospital. In the case of the *primipara,* the patient should go to hospital when pains occurred regularly at intervals of approximately fifteen or twenty minutes. A multiparous patient should be admitted to hospital if the membranes ruptured, or at the first sign of abdominal discomfort associated with uterine contractions. Occasionally difficulty was experienced in ascertaining whether labour had commenced. In "true labour", pains commenced in the back and were usually associated with a "show" of blood, and throughout their duration the uterus was firmer and more prominent in outline. Rupture of the membranes was often difficult to detect, but if it had occurred the hair of the fœtus could sometimes be felt and slight displacement of the head would produce a gush of *liquor amnii.* Indicators were sometimes useful, particularly bromthymol blue (0·2% in alcohol), which gave an alkaline reaction if liquor had swept through the vagina. Smears from the vagina could be shown by the Sudan method to contain fat from the vernix.

During the first stage of labour the patient should be encouraged to walk about and could be occupied with reading and knitting until the pains become more severe, when she should be kept in bed. The pains during the first stage were usually short and not of the "bearing down" variety. The patient should not be permitted to attempt to hurry labour along by pulling on a towel or pushing against part of the bed. Sleep should be encouraged (with the aid of sedatives) during night-time.

During the second stage the pains were more frequent, each lasted longer and they are associated with "bearing down". The patient should be confined to bed and sedatives and anæsthesia might be used.

Dr. Rome mentioned several points concerning delivery of the baby, which he said were useful when remembered by the practitioner. There was little chance of finding the chin until the anterior fontanelle was clear of the perineum, and it was often found to one or other side between the anus and coccyx. If difficulty was experienced, the Ritgen manœuvre might be helpful. In the delivery of the head, the perineum should not be touched by the fingers, and an attempt to deliver the head between pains was always associated with less damage to the soft parts of the mother. Delivery of the anterior shoulder might be difficult, but it was often of advantage to apply pressure in Kristeller fashion, or better still, to apply pressure above the pubis in a caudal and backward direction. If this proved unsuccessful, it was sometimes helpful to turn the patient quickly into the dorsal position. Dr. Rome also mentioned the importance of diet during labour. He said that the average patient required 2,000 Calories and 3,000 mils of fluid per day during labour, but solid food was best avoided. An adequate intake of food and fluid was necessary to maintain the strength of the mother, to forestall acidosis and to aid in the prevention of obstetric shock.

Management of the Third Stage of Labour.

Dr. W. D. Saltau said that there should be no need to emphasize the importance of the proper management of the third stage of labour, not only on account of the maternal mortality associated with the accidents of this stage, but also because of the effects on the immediate and sometimes the remote well-being of the patient. Proper management promoted a smoother convalescence during the puerperium, and the patient was less liable to infection and she nursed her baby better. Retention of pieces of placenta and membrane might be the cause of puerperal infection, resistance to which was lowered by any severe grade of anæmia. There was no question that excessive hæmorrhage might be produced by improper conduct of the third stage, and quite rightly this was mentioned in the textbooks as the most frequent cause of post-partum hæmorrhage. There was a certain amount of blood loss associated with the normal third stage, but the aim of the obstetrician should be to limit this to the absolute minimum. Whitridge Williams found that in 1,000 consecutive spontaneous labours the average blood loss was 343 mils. Any loss exceeding 600 mils should be considered abnormal.

Dr. Saltau briefly reviewed the phenomena that took place immediately after the end of the second stage. He said that there was a pronounced sudden reduction in the size of the uterus due to retraction with thickening in the muscular wall of the uterus. This caused constriction and kinking of the vessels in the placental site. Until contractions returned, one largely depended on these phenomena for the control of hæmorrhage in the early part of the third stage. Once contractions recurred, whether immediately or within a few minutes, one had a reinforcement of Nature's method for limitation of hæmorrhage in the early third stage. If these functions were not efficient, then this was the time when there was apt to be some over-distension of the uterus with blood, and Dr. Saltau thought that it was at this stage that some control of the fundus was indicated. The sudden diminution in the size of the uterus predisposed to separation of the placenta from its attachment, and with the oozing of blood from the placental site, this led to the formation of the retroplacental clot. This represented the so-called Schultze mechanism in placental separation, when the placenta tended to present at the vulva by its fœtal surface. In this case there was frequently little or no hæmorrhage until the stage of expulsion. Whether the placenta separated by this method, or by the Duncan method involving separation at its edge and a rolling-up into the longitudinal axis of the uterus, was immaterial as far as the management of the third stage was concerned. However, the latter method was more likely to be accompanied by slight continuous hæmorrhage until the placenta was away.

Dr. Saltau said that obstetricians had had it drilled into them that the essential part of the management of the third stage was the control of the fundus—that the hand should rest lightly on the fundus to elicit information as to whether the uterus was contracting or whether the fundus was filling up. If the control of the fundus was limited to this light pressure, no harm was likely to result; but there was always the temptation to do something more. On occasions, perhaps whilst the obstetrician was sucking mucus from the baby's mouth or tying the cord, he had asked sisters what the fundus was doing, only to note with apprehension that instead of lightly palpating it, they made a grab at an apparently elusive fundus, and then if it eluded them, made another grab and perhaps proceeded to massage it at the same time. The light pressure became converted into unnecessary meddlesome interference. As he had pointed out before, in the early minutes of the third stage they were depending for control of hæmorrhage on muscular retraction with constriction of vessels, and there was also the formation of the retroplacental clot of the Schulze mechanism to be considered; so it could readily be appreciated that unnatural interference with the uterine function at this stage might be a menace. Apart from the following-down of the fundus when the baby was born and the maintenance of light pressure for the first minute or two of the third stage, Dr. Saltau said that he sometimes wondered whether this so-called control of the fundus was really necessary. Unless the patient was obese the fundus could usually be visualized, and one could note the amount of external hæmorrhage. If necessary, intermittent light palpation of the fundus should suffice. As to the actual expulsion of the placenta, if the usual textbook signs of placental separation were present—fresh hæmorrhage, lengthening of the cord, increased mobility of and rise in level of the fundus—then all was well, and the placenta could be expressed by the so-called Dublin method in the average time of fifteen to thirty minutes or sometimes less; this was in contrast to Credé's method, which was the squeezing from the uterus of a placenta which might be still partly attached. Thus, within reasonable limits, and in the absence of continuous hæmorrhage, they should wait until some of these signs of placental separation were present. However, an American professor of obstetrics, Leroy Calkin, of Kansas University, from the observation of two signs which he stated had not been previously emphasized—(i) an alteration in the shape of the uterus from a flattening to a more globular shape, and (ii) a slight escape of blood—maintained that the placenta in almost 70% of cases separated in five minutes or less, and pointed out that this was in sharp contrast to the older idea of fifteen, twenty or thirty minutes for the duration of the third stage. He suggested expulsion of the placenta when these signs were present, rather than a delay for the lengthening of the cord *et cetera*. By the original method formulated by him in 1861, Credé expressed the placenta with the first contraction of the uterus in four to eight minutes. This was rightly condemned by his fellow obstetricians as being unphysiological. They stated that the uterus emptied too rapidly, it filled with clots, the tendency to late hæmorrhage was increased, the primary hæmorrhage was great and retention of fragments of placenta and membrane was more common. With these observations Dr. Saltau thought all were in agreement. At the other extreme, Ahlfeld, in 1882, proposed a purely expectant plan of treatment. The uterus was not touched unless in the case of profuse hæmorrhage, the patient was placed over a hole in the mattress, and the escaping blood was caught in a funnel and led to a graduated vessel under the bed. The obstetrician sat at her bedside watching her face, counting her pulse and occasionally taking note of the amount of blood lost. If the placenta did not come away in two hours, the patient was asked to bear down, and if she did not expel it, then it was expressed. Dr. Saltau thought that the busy modern obstetrician could hardly be expected to fall in with these ideas, so the happy medium was adopted of expression by the Dublin method, usually within half an hour. In the large majority of cases the third stage could be terminated in this way after good contraction and provided that some, if not all, of the signs of placental separation were present. No manipulation or interference with the fundus should be carried out until these signs were present, unless, of course, hæmorrhage occurred, when the fundus should be massaged to stimulate contractions. Dr. Saltau went on to ask how long they were to wait, in the absence of undue hæmorrhage and without the recognized signs of placental separation. At the end of half an hour he thought it permissible to massage the fundus and see if the placenta would come away. If not, one had to be patient and wait; but even if there was still no hæmorrhage after an hour, he considered it a fair thing to try a Credé expression. If this was unsuccessful, then one was probably dealing with the problem of the retained placenta, and this problem, along with that of post-partum hæmorrhage earlier in the third stage, was really outside the scope of the discussion. The early obstetricians occasionally resorted to pulling on the cord at the same time as they exerted pressure on the fundus. This procedure had naturally been discarded at the present time; but Dr. Saltau thought that when the placenta could be seen in the vagina, to lift it out by the cord, provided the fundus was under control, was not without its advantages. He had the impression that the membranes came away better, and there might be this added advantage. One noticed that occasionally when the placenta was pushed right out ahead of the contracting fundus, the uterus tended to settle into the pelvis. This seemed to lead to imperfect contraction, control and massage of the fundus became more difficult, and he had seen further hæmorrhage associated with this condition which might have been avoided. One had to remember, too, the extra strain on the uterine supports, which tended to result from too forcible pushing down of the fundus. With regard to the delivery of the membranes, Dr. Saltau did not think it mattered much whether they were twisted or gently levered out by a see-saw movement; but the main thing was patience.

Dr. Saltau then said that there was one other thing which should be avoided after the placenta had been expelled. Quite correctly one made sure that the uterus was firm by suitable massage; but sometimes one saw sisters continuing to massage a fundus which was already firm. This did more harm than good. Once the fundus was in good contraction, it should be left alone. If there was much subsequent relaxation, it could be massaged at intervals and any clots expelled. The importance of preservation of warmth of the patient could not be unduly stressed. Too often obstetricians tended to allow the patient to become cold whilst they were waiting for the termination of the third stage. In most labour wards there was a sterile catheter on the instrument tray, and even if there was no obvious collection of urine in the bladder, it never did any harm whilst one was waiting for placental separation to swab the vulva and pass the catheter. It eased one's mind as to a possible cause of delay in the third stage. The routine administration of pituitrin and occasionally ergometrine was wise, especially in these days of busy labour wards and shortage of staff. One could leave one's patient with an easier mind. There should be no need to mention the routine inspection of placenta and membranes and perineum for laceration. In the event of incomplete membranes or retained placental fragments, the only indication for exploration of the uterus was the proved *placenta succenturiata.*

Episiotomy and Perineal Repair.

DR. G. BEARHAM said that one aim of the obstetrician should be to starve the gynæcologist. He said that the woman's perineum and vagina should, after childbirth, be as near as possible anatomically to what it was immediately before conception. To attain this end he thought it necessary that during delivery the head should not be allowed to traumatize the perineum. He did not permit the head to stretch the perineum for longer than an hour in a *primigravida* or half an hour in a *multigravida*, and if he noticed that with each contraction as the head impinged on the perineum there was a trickle of blood running over the perineal edge, then unless delivery was effected after an episiotomy, the perineum would be badly torn. Dr. Bearham said that sometimes he was able to deliver a comparatively large head in a *primigravida* without any obvious perineal tear, only to find later that the woman complained of stress incontinence. This was due to submucous tearing of the pubo-cervical fascia in the anterior vaginal wall, with a resultant laxity of the bladder and urethral supports. During delivery of the head, on occasions, he had noticed a crack appearing in the skin of the perineum between the perineal edge and the anus. In these cases, to avoid a deep uncontrolled perineal laceration, he performed an episiotomy. He had found that by performing an episiotomy either in anticipation of an inevitable perineal tear, or when a tear had commenced, or if the perineum was being stretched to such a degree that the underlying fascia was likely to be torn, he had been able to give the patient a nearly normal vagina and perineum *post partum*. Dr. Bearham said that he had always performed an episiotomy at the equivalent situation on the perineum of 5 o'clock or 7 o'clock on a watch face. As a rule he took the incision down to muscle, but not through muscle; only rarely was it necessary to incise the muscle. The episiotomy was performed by inserting the blunt-pointed blade of a sharp pair of scissors beneath the appropriate part of the perineum between the fœtal head and the perineum, and then cutting. This is done after an appropriate antiseptic, such as Bonney's blue, had been applied to the perineum. He had found that if the perineum was rigid and good contractions were occurring, hot sterile moist flannels applied to the perineum would reduce its rigidity and often save the necessity of a forceps delivery.

Dr. Bearham said that, in a forceps delivery, before applying the blades, if the perineum was rigid, he always hooked the gloved lubricated index and middle fingers of his right hand over the edge of the perineum, and gently but firmly, with a side-to-side rocking motion of the hand, ironed out the perineum. Too much force should not be used in this manœuvre, or else the object of delivery of the fœtus without damage to the perineum would be defeated. As the lubricant, he preferred sterile glycerin to anything else. In his experience he had found that lacerations often completed the third stage of labour (*a*) in the cervix, (*b*) running on either side or both sides of the urethral orifice and about a quarter to half an inch lateral to the urethral orifice, (*c*) running from the perineum towards the vaginal vault in the postero-lateral vaginal wall, (*d*) involving the perineum. The last-mentioned tears of the perineum could be divided into three degrees: (*a*) a first degree tear, which involved only the skin of the perineum and mucous membrane of the posterior vaginal wall; this tear meant that some fibres of the levator fascia had been torn; (*b*) a second degree tear, which extended down to the muscle, but did not involve the muscle; (*c*) a third degree tear, which involved the muscle and extended into the rectum. In Dr. Bearham's opinion it was necessary always after completion of the third stage of labour carefully to examine the perineum and vagina for any evidence of tears, and if any were found, to repair them immediately. In his opinion, if a laceration of the cervix was accompanied by severe bruising of the cervical tissue, unless hæmorrhage occurred from this area, it was best not sutured, but repaired some months later, as the bruised area generally sloughed. However, if hæmorrhage from the cervix was obvious, this had to be controlled by sutures. Tears involving the *labia minora* or running lateral to the urethral orifice had to be sutured with interrupted sutures, so as to bring the torn edges into apposition. Number 2 plain gut was the best suture material for tears of this type. Tears involving the posterior vaginal wall should be sutured with interrupted Number 2 chromicized gut sutures.

Dr. Bearham said that in dealing with first, second and third degree tears of the perineum he found it necessary to bring the torn tissues accurately together in layers, using Number 2 chromicized gut for interrupted sutures. He found it best to do this with the patient in the lithotomy position or in the dorsal position with the legs abducted and flexed, as in these positions, particularly the former, it was easier to obtain correct apposition of the tissues, although in the case of first and second degree tears the left lateral position was used by many. Although many obstetricians did not worry about suturing first degree tears, he thought that they should be sutured. In the third degree tear the rectal mucous membrane should be sutured with interrupted sutures of Number 2 plain gut. The sphincter should be sutured with a figure-of-eight suture in two layers of Number 2 chromicized gut. The remainder of the torn muscle should be sutured edge to edge with interrupted sutures of Number 2 chromicized gut. Torn fascia, mucous membrane and skin should be sutured layer to layer with interrupted sutures of Number 2 chromicized gut. In suturing an episiotomy incision, Dr. Bearham always used a similar technique, employing interrupted sutures with Number 2 chromicized gut, and although this method took longer than a repair took when silk-worm gut was used, the end-result justified the extra time. As an antiseptic he always used Bonney's blue, as it was in his opinion more effective as an antiseptic and less irritating to the vulva than any other antiseptic. By way of after-treatment he always ordered a perineal toilet consisting of a wash-down with an aqueous solution of "Zephiran" (1 in 100) or "Dettol" (1 in 20), followed by drying of the suture line by dabbing it with sterile swabs and then either Bonney's blue, or spirit, after the patient voided urine, defæcated or needed a perineal toilet. When a third degree tear was present he confined the bowels for six days, giving a non-residual diet, and on the night before they were to be opened; he gave one ounce of paraffin oil and two drachms of milk of magnesia by mouth, and five ounces of olive oil or olive oil substitute by rectum, and on the morning on which the bowels were to be opened an enema.

Points in Aseptic Technique.

DR. ARTHUR HILL discussed the aseptic conduct of labour. He said that although the attainment of complete asepsis might be impossible, an attempt should be made to approach it. The development of a sound aseptic technique required attention to detail. Dr. Hill stressed the following points. Whenever possible the delivery should take place in a single room, well ventilated and accessible to sunlight. All basins, sheets, towels, gowns, packs, swabs, masks, gloves and instruments employed during labour must be sterile. Efficient masking should be carried out by everyone who entered the delivery room. An efficient mask must have a sufficient number of layers of a material capable of arresting droplets, and should be worn to cover the nose and mouth, pass well under the chin and fit closely to the cheeks. The Jessop hospital mask fulfilled all these conditions, but almost without exception the locally made masks he had examined were deficient on one or more counts. A general tightening up of masking technique was essential if preventible infections during labour by group A hæmolytic streptococci were to be eliminated. A wise precaution was the application of "Dettol" cream to the patient's hands every three hours; this minimized the risk that the patient might infect herself with her hands during pains. Vaginal examinations should be reduced to a minimum and were rarely necessary in uncomplicated labour. Obstetricians should rely only on antiseptics of proven worth, used in adequate strength. The two best at present available for obstetric use were "Dettol" and "Zephiran" concentrate, the former to be used in a strength not less than one part in three of water, and the latter in a strength of at least one teaspoonful to the pint of water. Some minutes should be allowed for the antiseptic to act before one proceeded to examination or delivery. All soap must be washed from the operative field before "Zephiran" was applied.

At delivery the accoucheur should wear a cap and sterile mask, long-sleeved gown and gloves. After the external genitalia and surrounding area had been cleansed with swabs soaked in "Zephiran", the guards were applied. When the patient was in the left lateral position (as was generally adopted in Victoria), it was sufficient to apply one obstetric sheet, folded to at least double thickness, to cover the whole of the left lower limb below the vulva. This obstetric sheet should be of thick material, finely woven, and an excellent size was six feet by three feet six inches. Sheets were to be used in preference to multiple towels, which were almost always inefficient. It was important to remember that a soaked sheet or towel meant an unsterile sheet or towel. Delivery should be conducted with the accoucheur facing the vulva, and using his right hand to prevent too early extension or expulsion of the fœtal head and his left hand to control the chin. By this method it was not necessary to fasten sterile guards around the patient's right leg or over her abdomen. The old domiciliary method of encircling the patient's right thigh with the accoucheur's left arm and forearm was unnecessarily cumbersome, almost inevitably destroyed asepsis, and, except when the patient was extremely difficult to control, should be abandoned. A perineal pad or double thickness of sheeting should be used to protect the left hand from the post-anal skin, and a similar protection should guard the hand from fæcal contamination when the perineum was being wiped back over the child's face.

After delivery, the child's respiratory passages could generally be cleared effectively by alternating the manœuvres of suspending the child vertically from its feet and wiping out its naso-pharynx with gauze on the gloved finger. When aspiration of the naso-pharynx was indicated, it was best to employ a mechanical aspirator or delegate the duty to an assistant. When the accoucheur himself orally performed aspiration with a mucous catheter, this should be done on a separate sheet or towel away from the mother, and at its completion, if asepsis was to be maintained, the accoucheur must remask and rewash himself and reapply sterile gown and gloves.

When the umbilical cord was being ligated, the ligature on the maternal side was best applied inside the vagina, and the cord was then divided between the maternal and fœtal ligatures and discarded. The cord was then out of the way during the suturing, and the risk of carrying infection from the anus to the perineum and vulva with movement of the cord was eliminated.

Before repair of a laceration or episiotomy wound, the genital and surrounding areas should once more be cleansed with swabs soaked in "Zephiran" solution, and one such swab could be placed temporarily inside the wound so as to cover its surfaces. A fresh sterile sheet or towel, folded longitudinally to double thickness, was now placed across the left thigh and folded back on itself so as to cover the lower part of the perineum and the anus. Towel clips fastened this sheet or towel to the left thigh, the perineum and the right buttock, so limiting the area of operative exposure and excluding the anus. A vaginal pack or rolled perineal pad, wrung out of "Zephiran" solution, was now used to plug the vagina deep to the wound, and suturing was then carried on in a dry field.

If 0·25 milligramme of ergometrine was injected intramuscularly at the time of delivery of the fœtal head, the third stage of labour was commonly completed with the patient still in the left lateral position and before perineal repair had been commenced. At whatever time, however, it became necessary for the obstetrician to "take over" from the nurse and transfer his hand to the uterine fundus, he should place a sterile towel, folded to double thickness, between his hand and the patient's abdomen.

At conclusion of the third stage the accoucheur himself should complete the patient's toilet—cleansing the vulva, applying the sterile pads and assisting to change the bedding and apply the abdominal binder. He must not delegate these important duties to an assistant. Like the wise surgeon, he must leave the field of action only when to his personal satisfaction the wound site had been adequately cleansed, closed and covered.

Comments.

Dr. John Green congratulated the speakers on the excellent combination of the physiological and clinical aspects of labour. He was attracted by the suggestion of Dr. Hayes that in labour progress and pains were complementary—not only did unsatisfactory pains give poor progress, but conversely, poor progress might lead to unsatisfactory uterine action. Dr. Green felt that if the labour pains could be rectified, progress might then become more satisfactory. He described a lazy uterus, a tired uterus and an erratic uterus. For the lazy uterus the use of œstrogens was helpful, for the tired uterus a good dose of morphine was often followed by a revival of good contractions, and in the type of case associated with short, sharp pains, in which the uterus seemed to hug the baby, an antispasmodic such as "Spasmalgin" was a help.

With regard to sedatives, Dr. Green said that in a routine way he used morphine and hyoscine for *primiparæ* and "Nembutal" for *multiparæ*. For the *primipara* chloral hydrate and potassium bromide could be combined with the sedative if the patient was restless, and it was given as a routine measure to a *multipara* just before the first dose of "Nembutal". Dr. Green knew that hyoscine was given with the barbiturates, but was uneasy concerning this combination. Ether could be used as an analgesic towards the end of labour, and it was possible in many cases to ease pain and yet obtain some cooperation from the patient. Nitrous oxide and oxygen could be delightful for the patient, but self-administration could not be guaranteed. Nitrous oxide and oxygen had the great merit of not diminishing the power of the uterine contraction. This indicated the positive use for nitrous oxide, as distinct from its comfort effect, for those patients who lacked the physical and mental fortitude referred to by Dr. Johnstone. In the case of such patients, who cried out for sedatives and yet went easily "out of labour", Dr. Green stopped all sedatives, relying on nitrous oxide and oxygen to ease the pain and allow progress to take place. With regard to continuous caudal anæsthesia, Dr. Green said that he could not resist referring, perhaps unfairly in his ignorance, to the comment of Howard James on spinal anæsthesia for tonsillectomy. Howard James quoted the remarks of Dr. Samuel Johnson on being shown a dog walking on two legs: "Sir, I perceive that it can be done, but it is not well done, the wonder is that it should be done at all."

Dr. Green said that he, like Dr. Bearham, employed episiotomy rather frequently, for he recollected several cases in which he had, so to speak, saved the perineum at the cost of overstretching the outlet. He thought that if forceps were not applied prematurely, the elaborate episiotomy of De Lee would not often be necessary. Contrary to the usual procedure, Dr. Green did his suturing with a couple of non-absorbable sutures, thereby minimizing anæsthesia and perhaps helping the third stage. He thought that the modern sedative *plus* anæsthetic management of labour increased the incidence of trouble *post partum*. In this connexion he reminded the meeting of the value of injection of the cord in cases in which the third stage was troublesome. For this reason he queried the suggestion made by Dr. Hill of cutting the cord inside the vagina; otherwise he reaffirmed the respect he had always held for the advanced theoretical and practical views of Dr. Hill on the prevention of sepsis.

Dr. B. M. Sutherland congratulated the speakers. He said that their discussions of the modern trends in obstetrics took his mind back to the old days, when patients were delivered in the home with untrained assistance and the practice of midwifery was not so pleasant. The introduction of the baby bonus had made it possible for mothers to enter hospital, and the speakers from the Women's Hospital had the advantage of every assistance and facility. In those days chloroform was the anæsthetic of choice, and he believed it still to be most useful. It was given a few drops at a time at the bedside, in much the same way as nitrous oxide and oxygen were given now. It had the advantage of making the patient quiet quickly, which was not so when ether was used. Dr. Sutherland had first commenced using morphine and hyoscine in 1907. The advantage of hyoscine was that it relieved the memory of events. It did not matter which of the numerous sedatives and anæsthetics was used, provided the attendant knew and attained proficiency in the one used. He thought caudal anæsthesia had only a limited use in large centres, and was not suited for general use or in the country.

For the young obstetrician the first requirement was to attain proficiency by practice in external palpation, using the different grips as outlined by Dr. Johnstone in determining the occiput and sinciput. If there was any doubt about external palpation, it was better to obtain all the information by one complete vaginal examination with proper surgical aseptic technique, and if necessary using an anæsthetic.

Dr. Sutherland pointed out a type of tear not mentioned by Dr. Bearham, in which the recto-vaginal septum and vaginal mucosa were transversely torn an inch or more within the vagina. It was the common practice at the time of Dr. Worrall and others to use silk-worm gut in all vaginal work including the cervix. Although brought up in this school, Dr. Sutherland had commenced using catgut exclusively in 1908. He had no cause for regret, and his patients were more comfortable, so that he now regarded silk-worm gut as out of date. Ironing out the perineum and careful watching of the third stage were essential parts of midwifery. Injection of the cord for retained placenta promised to be a valuable procedure, and Dr. Sutherland hoped that the hospital would bring forth its own statistics on the subject without referring to outside sources. The hospital produced a comprehensive medical report, which could to advantage be brought to notice more frequently.

Dr. W. E. Hewitt said that he had been interested in injection of the umbilical cord with saline solution, 500 mils of hot sterile saline solution being injected by an ear syringe at the end of twenty minutes to half an hour. In forty cases he had found that the placenta almost invariably separated. There were two exceptions—one patient had had a manual removal previously, and the other was a *primipara* with an atonic uterus.

Dr. J. Hutchings said that at the Queen Victoria Hospital, injection of the cord as a routine measure immediately after delivery had been tried in several hundred cases. The method used was by means of a French needle connected by rubber tubing to a milk bottle containing saline solution, which was displaced by air injected with a Higginson's syringe. It was found that the third stage was so shortened that the nurses were given a bad impression of its duration and did not obtain experience in its management. When the placenta was partially separated, the saline solution tended to run away rather than distend the placenta; but the result of the hot intrauterine douche was still effective. It failed in only a few cases, but the incidence of manual removal was much reduced.

Dr. W. J. McKillop considered that heroin was the most efficacious narcotic in labour; the patients settled down well, labour was quicker and fewer babies needed resuscitation than after the use of morphine. It was his opinion that rectal examination was a valuable means of assessing the progress of labour. In suture of the perineum he preferred catgut to non-absorbable material.

Dr. Elliott True, from the chair, expressed regret at the absence of Professor Marshall Allan owing to illness. Dr. True agreed with Dr. Sutherland that the hospital had valuable statistics on record, and asked members who were interested to write in any suggestions which the hospital staff would be pleased to discuss at some future meeting. He drew attention to the fact that there was a difference between hyoscine and scopolamine, scopolamine being the better, as it had less tendency to make the patient maniacal. He did not like the term "fixation of the presenting part", as it implied that it was not possible to "unfix" it. He thought "engaged" and "not engaged" were sufficient. In inviting the members to supper, Dr. True said that one definition of a symposium he had been able to find was that it was a banquet interspersed with intellectual discussion of a high standing.

Post-Graduate Work.

THE NEW SOUTH WALES POST-GRADUATE COMMITTEE IN MEDICINE.

Printed copies of the handbook "Facts about Rehabilitation for Medical Officers in the Services", compiled by the New South Wales Post-Graduate Committee in Medicine in conjunction with the New South Wales Branch of the British Medical Association, are now available on application to the Post-Graduate Committee, 131, Macquarie Street, Sydney, or to the New South Wales Branch of the British Medical Association, 135, Macquarie Street, Sydney.

For information on lectures for medical graduates application should be made to the Secretary, 131, Macquarie Street, Sydney. Telephones: BW 7483 and B 4606.

Attention is drawn to the following courses: course in gynæcology, February 18 to 22, 1946; course in obstetrics, February 25 to March 8, 1946; course in pædiatrics, March 11 to 20, 1946; advanced course in surgery, continuing to March 30, 1946; advanced course in medicine, continuing to March 15, 1946.

These courses are available to all practitioners, and candidates desiring to enrol are requested to make early application, as the numbers will be limited.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE'S PROGRAMME FOR MARCH.

The Melbourne Permanent Post-Graduate Committee announces the following programme for March, 1946.

University Classes.

University courses preparatory to the examinations for Part I of M.D. and M.S., and, if sufficient numbers present, for Part I of D.G.O., D.L.O., D.O., D.P.M., D.T.R.E. and D.D.R. will commence on March 13. The fee for each of these courses is thirty guineas.

Modern Methods and Technique in Teaching.

A course of five lecture demonstrations in teaching methods and technique will commence on March 14 at 8.15 o'clock p.m., and will continue on Thursday evenings until April 11 at the Melbourne University Arts Building. There will be no fee for this course.

Continuous Refresher Course.

Refresher classes, commenced in February, will be continued on Mondays, Tuesdays, Thursdays and Fridays of each week at the Royal Melbourne, Alfred, Saint Vincent's and Children's Hospitals. This course is for service and ex-service medical officers.

Course for M.D. (Part II) and M.R.A.C.P. Examinations.

The series of clinical lecture demonstrations designed for a higher qualification in medicine will be continued on Tuesday afternoons from 2.15 o'clock p.m.: March 5, by Colonel H. H. Turnbull on "Aortic and Coronary Disease"; March 12, by Dr. L. B. Cox on "Paraplegia"; March 19, by Dr. J. Horan on "Peptic Ulcer"; March 26, by Dr. E. G. Robertson on "Epilepsy".

Enrolments for courses should be made with the Secretary, Post-Graduate Committee, College of Surgeons, Spring Street, Melbourne, C.1, two weeks before the commencement of each course.

Correspondence.

THE CENTRAL HOSPITAL, MELBOURNE.

Sir: In your issue of January 5, 1946, you published a letter from Dr. C. H. Dickson, Secretary of the Victorian Branch of the British Medical Association, with a resolution of the Victorian Branch Council regarding Central Hospital.

The management of the hospital wishes to record its appreciation of the cooperation of the British Medical Association and to advise that this hospital will not have an out-patient department, and it is a feature of policy that all cases admitted on the recommendation of private practitioners should be referred back to them on discharge. Detailed clinical reports will be forwarded to the patient's medical attendant on discharge, and it is the earnest desire of the medical staff of Central Hospital to assist private practitioners in every possible way with details of investigations and treatment carried out at the hospital.

The general section of Central Hospital will be opened progressively as nursing staff becomes available, and it is anticipated that a medical ward will first be ready to receive patients on or about March 1, 1946. Beds for this ward may be booked through the Medical Director at any date henceforth.

Yours, etc.,
C. L. McVilly, Administrator.

Central Hospital,
172, Lonsdale Street,
Melbourne, C.1.
January 30, 1946.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Colman, Jack, M.B., B.S., 1943 (Univ. Sydney), 81, Preddy's Road, Bexley.
Duval, Ferdinand, M.B., B.S., 1937 (Univ. Sydney), 135, Macquarie Street, Sydney.
Harker, Andrew Jenning, M.B., B.S., 1939 (Univ. Sydney), 7, Rawson Street, Epping.
Fisher, Gerard Maxwell, M.B., B.S., 1942 (Univ. Sydney), NX200861, Captain, 101 A.G.H., Australia.
Schuster, Elizabeth Mary, M.B., B.S., 1945 (Univ. Sydney), Broken Hill and District Hospital, Broken Hill, New South Wales.
Kirtle, Patricia, M.B., 1931 (Univ. Sydney), Broughton Hall, Leichhardt.
Taylor, John Lindsay, M.B., B.S., 1939 (Univ. Sydney), Prince Henry Hospital, Little Bay.

Naval, Military and Air Force.

APPOINTMENTS.

The undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 18, of January 31, 1946.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The probationary appointments of the following Flight Lieutenants are confirmed: F. A. J. Hetherington (6381), J. N. Brown (267083), J. Kargotich (297400), K. G. Howsam (257504), M. J. Etheridge (257503), D. Hemming-Jones (277460), T. H. Gavin (277462).

Flight Lieutenant L. Kowadlo (257662) is transferred from the Reserve to the Active Force for full-time duties with effect from the 29th August, 1945.

◆

Obituary.

GUY STUART L'ESTRANGE.

WE regret to announce the death of Dr. Guy Stuart L'Estrange, which occurred on January 31, 1946, at Toowoomba, Queensland.

SIDNEY SOLOMON ROSEBERY.

WE regret to announce the death of Dr. Sidney Solomon Rosebery, which occurred on February 1, 1946, at Sydney.

WILLIAM CAMAC WILKINSON.

WE regret to announce the death of Dr. William Camac Wilkinson, which occurred on February 3, 1946, at Virginia Water, England.

◆

NOTICE.

THE annual cricket match between the members of the Australian Dental Association and the British Medical Association in New South Wales will take place at the Sydney Cricket Ground on Wednesday, March 6, 1946. Medical men desiring to play should communicate without delay with Dr. Walter L. Calov, 157, Macquarie Street, Sydney.

◆

Medical Appointments.

In pursuance of the provisions of *The Queensland Institute of Medical Research Act* of 1945, Sir Raphael W. Cilento has been appointed chairman, Dr. Abraham Fryberg has been appointed deputy chairman, and Dr. Aubrey D. D. Pye, Dr. George C. Taylor and Dr. Thomas V. Stubbs have been appointed members of the Council of the Queensland Institute of Medical Research.

Dr. E. S. A. Meyers has been appointed Medical Officer of Health of the South Coast Health District of New South Wales.

◆

Books Received.

"Green Armour", by Osmar White; 1945. Sydney, London: Angus and Robertson, Limited. 8½" × 5½", pp. 256. Price: 10s. 6d.

"War Neuroses", by Roy R. Grinker, Lieutenant-Colonel, M.C., and John P. Spiegel, Major, M.C., Army Air Forces; 1945. Philadelphia, Toronto: The Blakiston Company. 9" × 6", pp. 155. Price: $2.75.

"The Red Centre: Man and Beast in the Heart of Australia", by H. H. Finlayson; 1945. Sydney, London: Angus and Robertson Limited. 7¼" × 5", pp. 154, with illustrations. Price: 1s. 6d.

"Global Epidemiology: A Geography of Disease and Sanitation", by James S. Simmons, B.S., M.D., Ph.D., Dr.P.H., Sc.D. (Hon.), Tom F. Whayne, A.B., M.D., Gaylord West Anderson, A.B., M.D., Dr.P.H., Harold M. Horack, B.S., M.D., and collaborators; Volume One: Part One, India and the Far East; Part Two, The Pacific Area; 1944. London: William Heineman, Limited. 10" × 7", pp. 534. Price: 30s. net.

Diary for the Month.

FEB. 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
FEB. 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
FEB. 21.—South Australian Branch, B.M.A.: Council Meeting.
FEB. 21.—Victorian Branch, B.M.A.: Executive Meeting.
FEB. 22.—Queensland Branch, B.M.A.: Council Meeting.
FEB. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 27.—Victorian Branch, B.M.A.: Council Meeting.
FEB. 28.—South Australian Branch, B.M.A.: Scientific Meeting.
MARCH 1.—Queensland Branch, B.M.A.: Branch Meeting.
MARCH 2.—Tasmanian Branch, B.M.A.: Annual Meeting.
MARCH 5.—Federal Council, B.M.A., in Australia: Meeting at Sydney.
MARCH 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MARCH 6.—Western Australian Branch, B.M.A.: Council Meeting.
MARCH 6.—Victorian Branch, B.M.A.: Branch Meeting.
MARCH 7.—New South Wales Branch, B.M.A.: Special Groups Committee.
MARCH 7.—South Australian Branch, B.M.A.: Council Meeting.

◆

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

◆

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

SYDNEY HOSPITAL: HON. MEDICAL STAFF.—Applications are invited for the following appointments: (*a*) One Honorary Assistant Physician. (*b*) Should one of the present Honorary Relieving Assistant Physicians be appointed Honorary Assistant Physician, there will be vacancies for two Honorary Relieving Assistant Physicians. (*c*) Two Honorary Relieving Assistant Ophthalmic Surgeons. (*d*) Two Honorary Anæsthetists. (*e*) Should two of the present Honorary Assistant Anæsthetists be appointed Honorary Anæsthetists, there will be vacancies for two Honorary Assistant Anæsthetists and one Honorary Relieving Assistant Anæsthetist. *Honorary Clinical Assistants.*—(*a*) Medical: 14 Clinical Assistants, 2 Relieving Clinical Assistants. (*b*) Surgical: 5 Clinical Assistants, 1 Relieving Clinical Assistant. (*c*) Gynæcology: 2 Clinical Assistants. (*d*) Orthopædic: 2 Clinical Assistants. (*e*) Dermatology: 2 Clinical Assistants. Applications for the foregoing appointments will be received on the following terms and conditions: (1) Honorary Medical Staff: Term, 1st April, 1946, to 31st December, 1949. (2) Honorary Clinical Assistants: Term, 1st April, 1946, to 31st December, 1946. (3) Should any successful applicant (except Clinical Assistants) who is still on war service be unable to take up the appointment on the due date, the Board will grant leave until his return. (4) All applicants (except as stated in condition (5)) must complete a Sydney Hospital application form, and should attach copies of three credentials. Forms are available from the Medical Superintendent, who will also give particulars of duties. (5) Recent unsuccessful applicants for other appointments may, by letter, indicate they wish their prior application endorsed for any of the foregoing new vacancies, without the necessity of submitting an entirely new application. (6) Applicants applying for the senior positions where there are also junior vacancies, are recommended to specifically state they are willing to accept a junior appointment, if unsuccessful in the senior vacancies; otherwise, they will not be considered for the junior appointments. (7) Canvassing of members of the Board will disqualify. (8) Applications, which close on 4th March, 1946, at 5 p.m., to be addressed, "The President, Sydney Hospital, Sydney", and envelopes endorsed "Hon. Medical Staff Application".—A. F. BURRETT, Secretary.

LADY DOCTOR, six years' experience G.P., hospitals, requires assistantship or long term locum in the metropolian area, Sydney. Apply No. 43, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer St., Glebe, Sydney, N.S.W.

ROOMS in busy Sydney centre, excellent position, available for specialist. Apply No. 99, c.o. this office.

CHIROPODY

MASTER CHIROPODIST,
Room 19, Fourth Floor,
Challis House,
10 MARTIN PLACE, SYDNEY
'Phone BW 6642.

T. R. CHRISTIE,
Diploma Scientific Chiropody.

STORER-HARRISON X-RAY COMPANY

FOR EVERYTHING ELECTRICAL IN MEDICINE

- Ediswan Electric Convulsion Therapy Apparatus.
- Infra-Red Generators.
- Ultra-Violet Lamps.
- Short-Wave Diathermy.
- Surgical Diathermy.
- Faradic/Galvanic Apparatus.
- X-Ray Apparatus.
- X-Ray Accessories.
- Equipment Hire Service.

Further Particulars:
STORER-HARRISON X-RAY COMPANY
67 Hunter Street, Sydney
BW 5122 BW 7277

PERCIVAL D. OLLÉ

M.S.R., B.P.A., N.R. (Eng.),
PHYSIO-THERAPIST.

Short and Ultra-Short Wave, 6 to 20 Metres. At rooms only. Ultra-Violet, Infra-Red, Diathermy, Iontophoresis.

Physical injuries treated.
"Wembury",
42 Elizabeth Street, Ashfield.
Telephone: UA 1097.

QUEENSLAND MEDICAL PRACTICES

Brisbane, outer suburb, old established, every facility, income £3,500, comfortable house, ideal situation. Goodwill and property £4,500.

Country town, cool climate, prosperous district, income £4,000, shared hospital appointment. Goodwill £2,500, very modern brick home, every convenience, £5,500.

Country town (solo), death vacancy, excellent district, comfortable home (either sell or rent). Widow will also sell instruments, library and furniture.

Country town (three men), income £1,900, excellent hospital facilities, goodwill £1,200, comfortable ten-roomed house on lease £3 week.

Country town, prosperous dairying district, income from practice and private hospital over £5,000. Price, including property and hospital goodwill and furniture and fixtures, £3,750.

Will lease for nine months with option to purchase old-established general practice. Income over £4,000, good country town, every facility. Owner qualifying for specialist diploma.

We have other attractive opportunities and welcome inquiries, particularly from ex-service men.

DAVID W. REID
Medical Agent,
MEDICAL AND SURGICAL REQUISITES PTY. LTD.
Wickham Terrace, Brisbane
Telegrams: "Measure", Brisbane.
'Phones: B 0294, B 0295, M 7450.

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

COUNTRY PRACTICE. Cash takings £1,850. For sale, £1,400. House £1,100.

TASMANIAN CITY PRACTICE for sale, £3,000. House for sale or rental.

MEDICAL PRACTITIONER required for country practice. Guaranteed £800 per annum. House for sale or rental.

SUBURBAN AND COUNTRY assistants required.

PARTICULARS IN CONFIDENCE

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

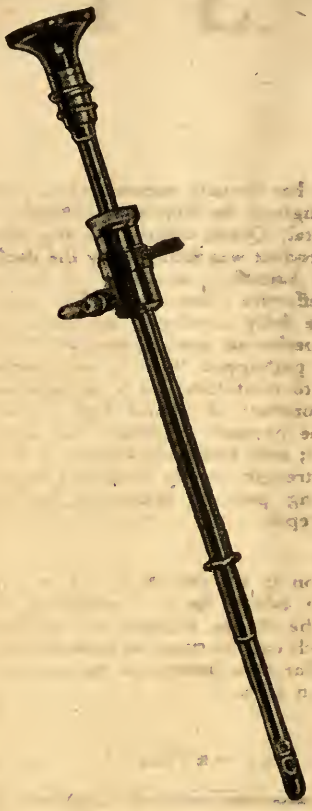
COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance available in approved cases to facilitate transfers.

Telephones B 4159, XA 2644 (After Hours) **Telegrams: "Locumtens Sydney".**

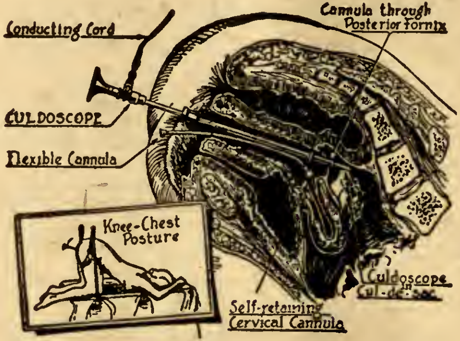
C. R. STRANGE,
Manager and Secretary.



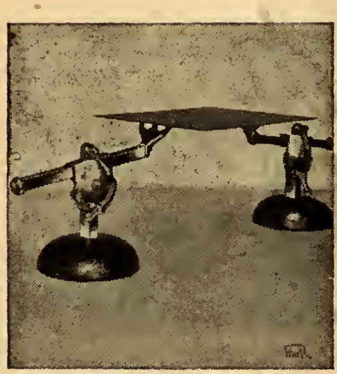
The Decker CULDOSCOPE

A NEW INSTRUMENT FOR ACCURATE DIAGNOSTIC PROCEDURES IN THE FEMALE PELVIS . . . .

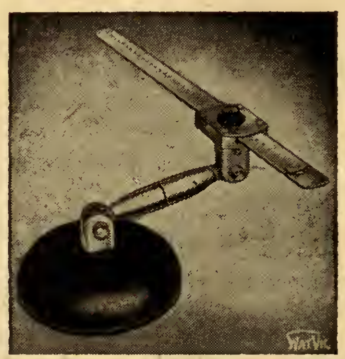
THE Decker Culdoscope consists of a right angle vision telescope, trocar and cannula especially designed to facilitate puncture of the cul-de-sac, and a set of three cervical cones and flexible tube with Luer lock connectors. With this instrument accurate visual diagnosis may be made, as all organs of the female pelvis are readily observed when patient is in the knee-chest posture as illustrated. This instrument also enables the operator to procure a photographic record of the appearance of the pelvic organs.


Conducting Cord
Cannula through Posterior Fornix
Culdoscope
Flexible Cannula
Knee-Chest Posture
Culdoscope in cul-de-sac
Self-retaining Cervical Cannula

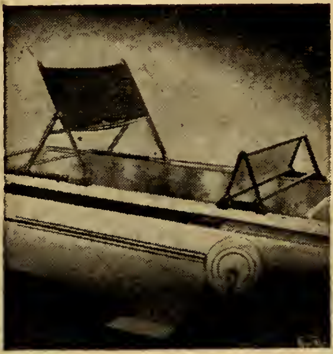
WatVic Apparatus for Pelvimetry



For Anterior/Posterior position (Thom/Torpin method). Includes adjustable fittings, arms, localizing pointers, locking devices and radiopaque plaque suitably perforated.



For Lateral position (Thom/Torpin method). Includes base, adjustable members, metal bar suitably perforated and fitted with spirit level.



Back Rest and Foot Rest arranged to fit WatVic Double Two and Double Three X-Ray Tables. Adjustable.

For full particulars 'phone or write nearest WatVic Showrooms.

WATSON VICTOR
LIMITED

Sydney, Melbourne, Brisbane, Adelaide, Perth, Wellington, Auckland, Christchurch.

ANTISEPSIS

Prevention or Cure

'*Streptococcus pyogenes* and *B.coli*, even in the presence 'of pus, are killed within two minutes by a two per cent. 'solution . . . moreover, when Dettol is dried on the skin it 'confers protection for several hours against contamination 'by hæmolytic streptococci.'

J. Obstet. Gynæc, 1933, 40. 966.

In the advance of medicine war has always been the great catalyst. Today we see a quickening of the tempo of research into the chemotherapy of infections—the synthesis of ever more effective compounds for enhancing the body's resistance to bacterial invasion.

But in the operating theatre, in the labour ward, wherever the battle against infection is fought, there can be no relaxation in the ritual of antisepsis—no compromise in the principle that the greatest triumph over infection lies in its prevention.

At this time more than ever the chosen weapon in the first offensive line is Dettol — the general purposes antiseptic that has virtually superseded all others in hospitals throughout the Empire. In Britain's great lying-in hospital, Queen Charlotte's, the introduction of this product was followed by the decline of over 50% in hæmolytic streptococcal infection—long before effective chemotherapeutic means for combating the fully developed infections became available. Experiments have shown that Dettol not only destroys pathogenic bacteria but renders the skin immune to reinfection for a period measured in hours. Moreover, it retains high bactericidal potency in the presence of blood, pus and other organic matter; and, being non-caustic, it is applicable at full strength to raw wounds and surfaces without causing pain or inhibiting the natural processes of repair.

Every extension in the use of Dettol, in the hospital and the home, for the protection of the patient and the doctor, reduces the incidence of infections which call for curative measures. Cure is more spectacular than prevention but prevention is still better than cure.

RECKITT & COLMAN (AUSTRALIA) LIMITED, (PHARMACEUTICAL DEPARTMENT), SYDNEY
2908

Fellowship of Postgraduate Medicine

1, Wimpole Street, LONDON, W.1
Telephone: Langham 4266.

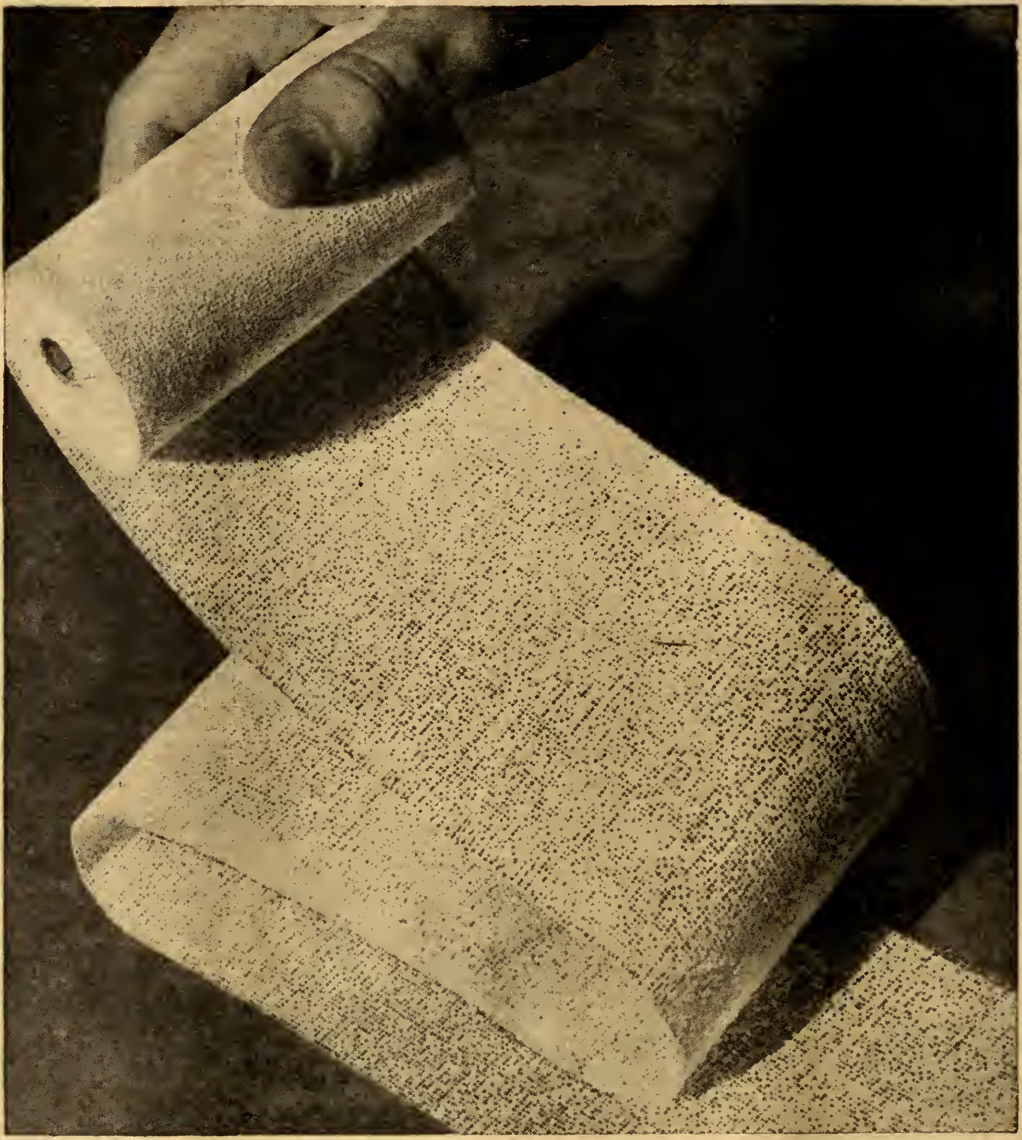
should be consulted regarding all Postgraduate instruction. ANNUAL MEMBERSHIP SUBSCRIPTION £1 1s. permits Members, on payment of the requisite fees, to attend the SPECIAL COURSES arranged periodically in almost every subject (including Courses for the M.R.C.P. and F.R.C.S. Final Examinations).

The *Post Graduate Medical Journal* (published monthly), giving details, in addition to matters of Clinical and Practical interest, is included in the Membership subscription, or may be subscribed to separately at 12s. per annum, post free, by practitioners whilst resident overseas.

Prutone
D·H·A

Compound chlorbutol dusting powder.
For pruritus ani, pruritus vulvae and cutaneous inflammation generally.

FELTON GRIMWADE & DUERDINS PTY. LTD.
342 FLINDERS LANE, MELBOURNE, C.1



The perfect finish and even impregnation of the 'Cellona' Plaster of Paris Bandage ensure a light cast of great strength. To facilitate the making of large casts, 'Cellona' is also supplied in widths of 18″, 24″ and 36″.

Cellona PLASTER OF PARIS BANDAGES

TRADE MARK

WHOLESALE DISTRIBUTORS

MELBOURNE : Felton, Grimwade & Duerdins Pty. Ltd.

SYDNEY : Elliotts & Australian Drug Pty. Ltd.

ADELAIDE : A. M. Bickford & Sons Ltd.

PERTH : Felton, Grimwade & Bickford Ltd.

BRISBANE, ROCKHAMPTON & TOWNSVILLE : Taylors, Elliotts Pty. Ltd.

HOBART & LAUNCESTON, TASMANIA : L. Fairthorne & Son Pty. Ltd.

AUCKLAND, CHRISTCHURCH, DUNEDIN, WELLINGTON : Kempthorne, Prosser & Co.'s New Zealand Drug Co. Ltd.

E6

Made in England by T. J. Smith & Nephew Ltd., Hull

BENEVOLENT SOCIETY OF NEW SOUTH WALES.—Applications are invited from medical practitioners for the following appointments which have become vacant through effluxion of time in accordance with the by-laws. Closing date 28th February, 1946. *Royal Hospital for Women, Paddington:* Hon. Obstetrician and Gynæcologist (retiring, Dr. H. A. Ridler), Hon. Assist. Obstetricians and Gynæcologists (retiring, Drs. T. H. Small and G. G. L. Stening), Hon. Psychiatrist (retiring, Dr. J. McGeorge). *Renwick Hospital for Infants, Summer Hill:* Hon. Physician (retiring, Dr. V. Conrick), Hon. Urologist (retiring, Dr. C. Edwards), Hon. Anæsthetists (retiring, Drs. K. M. Locke and P. L. Jobson), Hon. Radiologist (retiring, Dr. M. Dalgarno). Hon. Dental Surgeon to above hospitals (retiring, Dr. W. J. Wearn). *"Scarba", Bondi:* Hon. Visiting Medical Officer (retiring, Dr. V. Rich). All the above are eligible for, but not entitled to, re-election. W. B. RODD, Secretary, General Offices, Thomas Street, Sydney.

MAREEBA HOSPITALS BOARD. Applications are invited for the position of Resident Medical Officer. Salary £600 per annum, plus £2 2s. per week living allowance and reimbursement of all reasonable expenses incurred whilst visiting subsidiary hospitals. Furnished quarters available at Mareeba Hospital for single applicant. Duties consist of visiting Board's subsidiary hospitals at Mt. Molloy, Chillagoe and Mt. Mulligan periodically (such visits requiring about one week out of every four) and generally assisting Medical Superintendent when at main hospital, Mareeba. Duties to commence as soon as possible. Full fares to Mareeba refunded after 12 months' service. Applications, closing at 5 p.m. on 19th February, 1946, to be addressed to F. H. Jay, Secretary, P.O. Box 27, Mareeba, N. Qld. Applicants are advised to send applications per air mail owing to possibility of disruption of train services through floods.

VICTORIAN EYE AND EAR HOSPITAL.—Applications are invited for appointment to the Honorary Surgical and Medical Staff of the above hospital: Honorary Ophthalmic Surgeons, Honorary Aural Surgeons, Honorary Assistant Ophthalmic Surgeons, Honorary Assistant Aural Surgeons, Honorary Clinical Assistants (Ophthalmic), Honorary Clinical Assistants (Aural). Application forms may be had on application to the undersigned. All applications to be lodged by not later than 23rd March, 1946.—J. MILLER, Manager and Secretary.

VICTORIAN EYE AND EAR HOSPITAL.—Applications are invited for the (temporary) position of Anæsthetist at the hospital. Remuneration £2 2s. per session. Applications to be lodged by the 15th February. Forms of application may be had on application to the undersigned. — J. MILLER, Manager and Secretary.

ROYAL HOSPITAL FOR WOMEN, PADDINGTON (Benevolent Society of New South Wales). — Applications on prescribed form are invited for Resident Medical Officer. Term for three months, commencing 1st April, 1946. Salary at the rate of £235 p.a. Canvassing of directors is prohibited. Applications close 2nd March, 1946.—W. B. RODD, Secretary, General Offices, Thomas Street, Sydney.

Service for Doctors

Watson House, Bligh Street, Sydney.

Telephone: BW4433.

Principals, Please Note.—We have a number of young married practitioners, mostly ex-services, who are anxious to enter general practice in the city or country as assistants or junior partners, and who reside in the following Sydney suburbs: Balmoral, Bellevue Hill, Bondi, Chatswood, Cronulla, Gordon, Mosman, Roseville, Rose Bay and Wollstonecraft.

Vendors, Please Note.—We have a number of ex-service doctors who are cash buyers for suburban or country practices, goodwill and property, with residence, for exchange in the following Sydney suburbs: Bondi, Chatswood, Gordon, Rose Bay, Bellevue Hill and Balmoral.

Particulars in Confidence.

WATSON VICTOR

LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

APPLICATIONS are invited for the position of Medical Practitioner for Kimba District in South Australia. Practice covers a radius of approximately 35 miles. Guarantee by District Council of £1,000 p.a. Well-equipped government subsidized hospital at Kimba. Further particulars may be obtained from the Secretary, Kimba Hospital, Kimba, S.A.

RENWICK HOSPITAL FOR INFANTS, SUMMER HILL. Applications, on prescribed form, are invited for the position of Resident Medical Officer. Salary at the rate of £4 p.w. Vacancy March. Particulars, Medical Superintendent.—W. B. RODD. Secretary, Benevolent Society of N.S.W., General Offices, Thomas Street, Sydney.

MICROSCOPE for sale. Monocular. Four eyepieces and four objectives, including oil immersion lens. Moving stage. Centering condensor. £50. Apply to No. 100, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

FOR SALE, Harvard Examination Chair, Surgical and Ear, Nose and Throat Instruments, two Surgical Instrument Cases, one Table with drawers for dressings, Leitz microscope. — BROWN, 10 Church Street, Randwick, FX 2572.

ST. GEORGE DISTRICT HOSPITAL, KOGARAH, SYDNEY (325 Beds).—Applications are invited for the temporary honorary positions of Consulting Obstetrician, Assistant Surgeon and Morbid Anatomist until most service medical officers have been demobilized. Applications close Monday, 18th February, 1946.—C. D. MCINTYRE, Secretary.

WESTERN ELECTRIC STETHOSCOPE (portable), new batteries, in first-class condition, for sale. Submit offer. Particulars from BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD., 225 Wickham Terrace, Brisbane, B 9597.

COMMONWEALTH OF AUSTRALIA, NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL: Nuffield Foundation, Rockefeller Foundation and Carnegie Trust Fellowships.

Applications are called for Overseas Travelling Fellowships sponsored by the above bodies. Applications must reach the Chairman, National Health and Medical Research Council, Department of Health, Canberra, not later than 1st March, 1946, and be set out in the following form: name of foundation or trust; name of applicant and marital status; details of academic record; details of service record; contributions to literature; details of any teaching or research appointments; arrangements, if any, made for a teaching or research post on return to Australia; subject of proposed study or research in detail; department, university, college, hospital or clinic where it is proposed the work will be carried out; names and addresses of not more than three referees, resident in Australia, to whom reference can be made for confidential reports; financial assistance required; approximate date at which Fellowship could be taken up. The following are the particulars and conditions associated with the individual grants:

The Nuffield Foundation (Nuffield Dominion Medical Fellowships). 1. The Nuffield Foundation has made available a total sum of £6,000 for the award of Nuffield Dominion Medical Fellowships to Australians in the years 1946 and 1947. 2. The purpose of these Fellowships is to enable some medically qualified persons from Australia to obtain in the United Kingdom such postgraduate training and experience as may be necessary to prepare them to undertake, subsequently, medical teaching and research work on their return to Australia. 3. The Fellowships will be awarded by the trustees of the Foundation on the recommendation of a special selection committee appointed by the National Health and Medical Research Council. 4. The Fellowships will be open to persons of either sex who are nationals of Australia, who hold recognized medical qualifications, and whose talents and personal inclinations afford good promise of their ability to advance knowledge and education in some branch of medicine. 5. Preference will be given to candidates who have served as medical officers with the armed and auxiliary fores of the Crown. 6. A Fellow will be expected to resume residence in Australia on the completion of his Fellowship. 7. So far as possible the amount of any award and the conditions attached to it will be adjusted to the needs of the recipient, having regard to the purpose for which the Fellowships are offered. 8. The annual value of a Fellowship will be between £300 and £800. The travelling expenses incurred by the Fellow in coming to the United Kingdom and returning to his own country will be paid in addition. If a Fellow wishes to be accompanied by his wife, he may apply for the payment of his wife's travelling expenses as well. 9. A Fellowship will be tenable for one or two years. 10. Except with the express permission of the trustees of the Foundation, a Fellow may not hold any other award concurrently with his Fellowship. 11. A Fellow will be required to carry out, at institutions approved by the trustees of the Foundation, a programme of work and training similarly approved. Other work, paid or unpaid, may not be undertaken without the permission of the trustees. 12. A Fellow will be required to submit to the trustees at the end of each year's of his Fellowship a report work during that year. 1 the trustees at any time a Fellow neglects or h the obligations of his they shall have pow to terminate his Fe

Rockefeller F Rockefeller Fou available a sum Rockefeller Found for the year 194 for approximately The understanding of these Fello Fellow s wh salaried appointm teaching and research for at least one year upon return to Australia. These appointments need not be necessarily full time, but a greater part of the time is to be devoted to teaching and research, either clinical or associated with the basic sciences. There are no restrictions as to the subject of study, nor the country to which the Fellow is sent. The selection of applicants is to be made by an Overseas Travelling Fellowship Committee appointed by the National Health and Medical Research Council.

L

Carnegie Trust. The Carnegie Trust has made available the sum of $25,000 for one year. This will allow for approximately eight Fellowships. Fellowships are available to demobilized medical officers for the purpose of travel and study in the U.S.A. for a period of six months. This is particularly applicable to clinical teachers who have served in the medical services of the armed forces. There are no other special conditions. The selection of applicants is to be made by an Overseas Travelling Fellowship Committee of the National Health and Medical Research Council.

Commonwealth Fund of New York (Pan-American Sanitary Bureau). — The Commonwealth Fund will consider up to five Fellowships, up to 5,000 dollars each for one year, for advanced work or study. Grants are subject to the condition that the appointee returns to an academic position in Australia at the cessation of his Fellowship. The appointments will be made by the Commonwealth Fund on merits of application. Applications will be forwarded to the Commonwealth Fund through the Overseas Travelling Fellowship Committee.

Taxation. Copies of a ruling on the taxation requirements of persons appointed to Overseas Travelling Fellowships are available on request to the Director-General, Commonwealth Department of Health, Canberra.

WANTED, practice, Sydney suburban or outer suburban, cash. S.P. c.o. this journal.

FOR SALE, one portable ether machine, suitable obstetrics, perfect order. £15. LM 3088.—B. CATHER. 457 Parramatta Road, Leichhardt, N.S.W.

SPEECH THERAPY.

Remedial Treatment for Reading, Writing, Speech and Voice Disorders.

MISS WRAY, A.S.S.T., London.

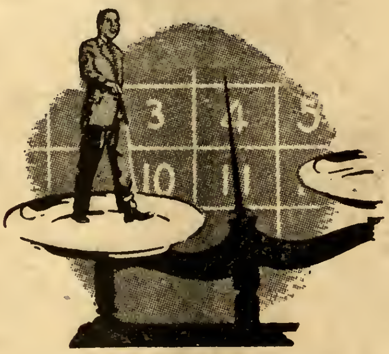
Speech Therapist to R.A.H.C., Sydney.

231 Macquarie Street, Sydney.
'Phone: B 4650.

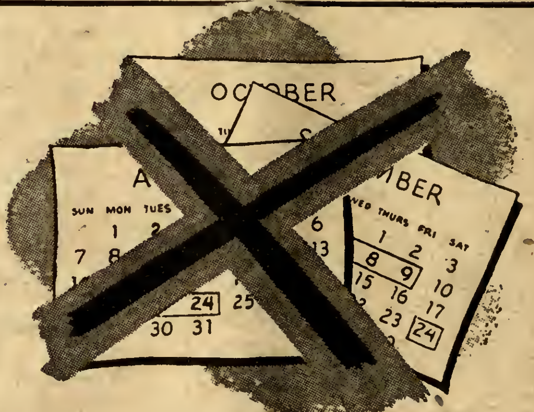
The medication of choice in Peptic ulcer

Prompt relief from pain

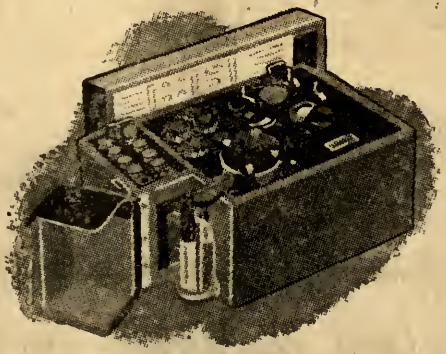
Rapid healing of ulcer



Superior weight gain during treatment


OCTOBER
SUN MON TUES
1 2
7 8
24 25
30 31
BER
WED THURS FRI SAT
1 2 3
8 9 10
15 16 17
23 24

Fewer Recurrences

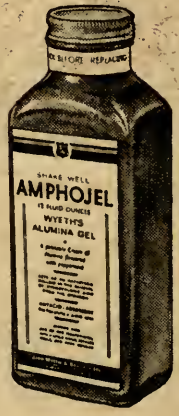


No Alkalosis: no secondary acid rise

AMPHOJEL

Colloidal Aluminium
Hydroxide Gel

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney


SHAKE WELL
AMPHOJEL
12 FLUID OUNCES
WYETH'S
ALUMINA GEL

A13M

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS SIMPSON, of Fairholm Street, Strathfield, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

(234 Cairns)

THE MEDICAL JOURNAL OF AUSTRALIA

230

Vol. I.—33rd Year. SYDNEY, SATURDAY, FEBRUARY 16, 1946. No. 7.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units	**10/6**
This quantity is sufficient for a series of parenteral doses. (Available also in boxes holding 5 ampoules.)	
1 ampoule containing 15,000 Oxford units	**5/6**
This quantity is intended for a single parenteral dose. (Available also in boxes holding 6 ampoules.)	
1 ampoule containing 5,000 Oxford units	**4/6**
This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired. (Available also in boxes holding 6 ampoules.)	

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

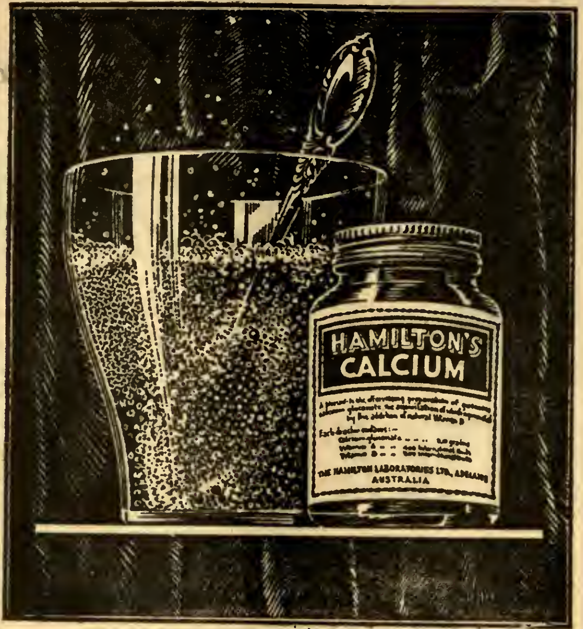
The Penicillin Order published in *Gazette* No. 189 of 20th September, 1944, and in The Medical Journal of Australia of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

The addresses of the Senior Commonwealth Medical Officers are: **NEW SOUTH WALES**, Customs House, Circular Quay, Sydney; **VICTORIA**, A.C.A. Building, 118 Queen Street, Melbourne; **SOUTH AUSTRALIA**, C.M.L. Building, 41-47 King William Street, Adelaide; **WESTERN AUSTRALIA**, 4th Floor, G.P.O., Perth; **TASMANIA**, Commonwealth Health Laboratory, Launceston; **QUEENSLAND**, Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES

PARKVILLE, N.2, VICTORIA, AUSTRALIA



THE ORIGINAL EFFERVESCENT CALCIUM

HAMILTON'S CALCIUM

FOR PROLONGED THERAPY
FOR GREATER SOLUBILITY

EACH DRACHM CONTAINS 20 GRAINS OF CALCIUM GLUCONATE WITH VITAMINS A AND D

AVAILABLE IN 2½ OZ. AND 15 OZ. PACKAGES

THE HAMILTON LABORATORIES LTD.
ADELAIDE — AUSTRALIA

For pleasant Calcium administration

JUST PUBLISHED

72 pages (9 × 7 inches): over 1,000 entries.
TWO SHILLINGS

AN INDEX OF MODERN REMEDIES

(Third Series)

By WILLIAM MAIR, M.P.S., F.C.S., F.R.S.E.

From the foreword by DR. JOHN H. GADDUM, F.R.S., Professor of Materia Medica and Pharmacology in the University of Edinburgh: "*The book is thoroughly up to date. It contains information not readily available in any other form, about all the drugs mentioned in the Supplements to the B.P. and B.P.C., and the names of Substances approved by the General Medical Council. No one who is interested can be without this book; everyone can afford to buy it.*"

1 Copy	Two Shillings
3 Copies in one Parcel	5/6
6 " " " "	10/9
12 " " " "	21/–

All post free at home or abroad.

Each copy in an envelope ready for delivery or posting.

Remittance with all orders, to the Publishers:

THE SCOTTISH CHEMIST,
240 Albert Drive, Glasgow, S.1

Quinolor Compound Ointment

SQUIBB

AN ointment of proved value in staphylococcal infection, particularly sycosis barbæ, sycosis vulgaris, tinea sycosis and such dermatological conditions as Impetigo contagiosa. Prolonged antiseptic action and noteworthy properties of promoting tissue repair make Quinolor a valuable aid in cases where its use is indicated.

Distributors for Australia

S. HOFFNUNG & CO. LTD.
SYDNEY

Vitos

B COMPLEX
OR
SINGLE
FACTORS
?
IN VITAMIN THERAPY

The established interdependence of members of the vitamin B Complex often constitutes a limiting factor in successful sub-clinical vitamin therapy, where preparations providing only a single member of the Vitamin B Complex are prescribed.

Vitos is one of the richest known sources of Vitamin B_1, B_6 and E and also provides significant amounts of several other components of the B Complex, e.g., Riboflavin, Niacin and Pantothenic Acid, combined with 30% Protein of high biological value.

> Vitos Vitamin Abstracts.
> Williams, R. J. "Water Soluble Vitamins"
> Ann. Rev. Biochem, XII.
> *The complex relationship existing between the various components of the B complex is discussed with due stress being laid on the fact that the effects produced by any one member are often dependent on the supply of others.*

Prepared under scientific laboratory control and guaranteed to contain no synthetic vitamin admixture.

H. L. BUSSELL & CO. PTY. LTD.
20-32 MEAGHER STREET, SYDNEY

The "General" on the home front

THE DOCTOR at home shoulders a greater burden than ever before. Charged with responsibility of winning the never-ending war against disease, he must now fight many a battle almost single-handed.

But, thanks to the contributions of scientific progress, modern weapons are a constant aid in placing victory within his grasp. Take fluoroscopy and radiography, for example . . . both point the way to positive diagnosis. They eliminate doubt and uncertainty . . . permit a safer, surer course of action that leads to speedier recovery.

* * * * *

Screen care is important. Intensifying screens that are dirty, scratched or stained increase exposure time and produce faulty negatives. To insure clear, sharp, contrasty radiographs—the kind needed for accurate diagnosis—replace damaged, worn screens now. Patterson Screen Division of E. I. du Pont de Nemours & Co. (Inc.).

Patterson Screen Division

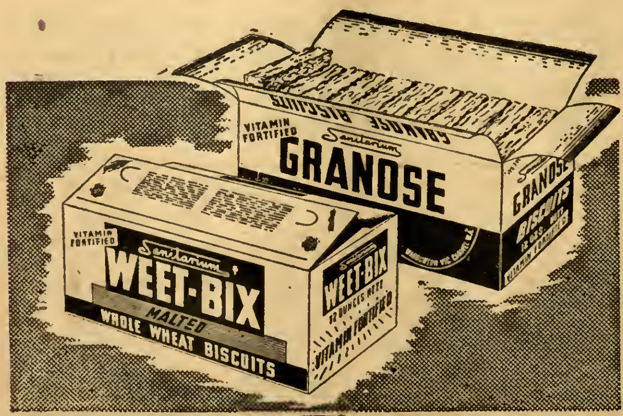
DU PONT
E. I. du Pont de Nemours & Co. (Inc.)
BETTER THINGS FOR BETTER LIVING—THROUGH CHEMISTRY

Distributors for Australia and New Zealand:
WATSON VICTOR LIMITED
Watson House, Bligh Street, Sydney
Melbourne, C.1 .... 117 Collins Street
Brisbane, B.10 .... 105 Eagle Street
Adelaide .... 9 Gresham Street
Wellington, N.Z. .... Kelvin Chambers, 16 The Terrace
Auckland, N.Z. ...... Lister Buildings, Victoria Street
Perth .... 205 St. George's Terrace

Laboratory Control...

● The goodness of Sanitarium Weet-bix and Granose Whole Wheat Breakfast Biscuits, Bixies Whole Wheat Flakes and other equally famous Sanitarium Health Food products is not left to chance. To the contrary every stage of manufacture is carefully controlled by stringent laboratory tests that fully safeguard the food value of the finished products. Their inclusion in light nourishing diets, therefore, can be recommended with confidence.

SANITARIUM HEALTH FOOD CO.



M196-4435

Rapid and effective treatment of RICKETS

IN the treatment of rickets the oral administration of *Collosol* Calcium with Vitamin D is widely recommended. In a number of tests on rats in which rickets had been induced, complete cures have been effected in a few days simply by the use of this preparation.

Collosol Calcium with Vitamin D contains 1 per cent. (approx.) of a colloidal calcium salt of fatty acids standardised to contain 250 international units per teaspoonful of Vitamin D.

Clinical Literature on Request.

Collosol Calcium with Vitamin D is supplied in 4 oz., 10 oz. and 20 oz. bottles and in vials of 25 and 100 capsules or sugar-coated tablets (each one fluid drachm) for oral administration. Also for subcutaneous injection in ampoules (boxes of six) of ½, 1 and 2 c.c., and 15 and 30 c.c. vials.

Crookes' COLLOSOL CALCIUM with VITAMIN 'D'

Stocks held by the Associated Houses of the Drug Houses of Australia Ltd.

THE CROOKES LABORATORIES
(*British Colloids Ltd.*)
PARK ROYAL, LONDON, N.W.10
ENGLAND

In Gastric Hyperacidity

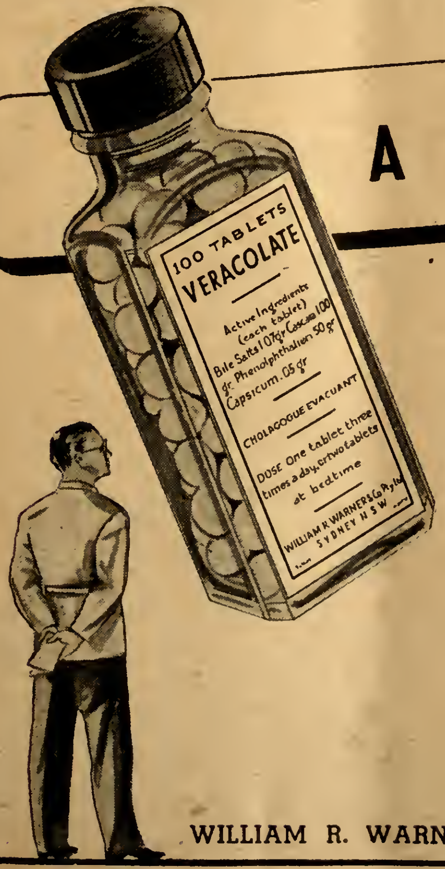
CAL-BIS-NATE

The composition of Cal-Bis-Nate is simple and rational. Its effectiveness, however, rests in no little measure on the fact that the ingredients are matched for density and are held together in a colloidal base. This means uniform dispersion—one dose is the same as the next. Whether it is a simple gastric hyperacidity with sour eructations, or a more severe condition of gastric ulcer, with its burning, stabbing, pressing pain, Cal-Bis-Nate affords quick, prolonged and safe relief, uncomplicated by the dangers and discomforts of gaseous distension.

CAL-BIS-NATE

A trial supply will gladly be sent on request.

WILLIAM R. WARNER & CO. PTY. LTD., 508-528 RILEY STREET, SYDNEY, N.S.W.


100 TABLETS
VERACOLATE
Active Ingredients
(each tablet)
Bile Salts 1.07 gr Cascara 100
gr Phenolphthalien 50 gr
Capsicum .05 gr
CHOLAGOGUE EVACUANT
DOSE One tablet three
times a day, or two tablets
at bedtime
WILLIAM R WARNER & Co Pty Ltd
SYDNEY N S W

A Physiological Evacuant

It is easy to relieve constipation by the use of a purgative, but this does not remove the cause, so the trouble inevitably recurs.

VERACOLATE is a physiological evacuant, for it contains the bile salts—sodium taurocholate and sodium glycocholate—which are the natural laxatives of the intestinal canal. A mild vegetable laxative and a carminative are added to initiate peristaltic action and increase gastric tone. Veracolate Tablets, therefore, relieve constipation and at the same time overcome the dyspepsia, biliousness and sallow complexion associated with biliary stasis. Veracolate encourages all the digestive activities to return to healthy normality.

VERACOLATE

TABLETS

WILLIAM R. WARNER & CO. PTY. LTD., 508-528 RILEY STREET, SYDNEY, N.S.W.

GP

NEOCAL

Each tablet contains:

DI-CALCIUM PHOSPHATE	.. gr. 7.5
FERROUS SULPHATE	.. gr. 0.33
VITAMIN B_1	.. .. .. 100 I.U.
VITAMIN D	.. .. .. 400 I.U.

100 Tablets
NEOCAL
DI-CALCIUM PHOSPHATE
FERROUS IRON
with
VITAMINS B_1 and D
G.P.
GP

SUPPLIED IN BOTTLES OF
100 AND 1,000 TABLETS

PRICE TO PATIENTS
6/-
PER 100 TABLETS

G.P.
PTY LTD
Manufacturers of Standardized
Biological and Pharmaceutical Products
Laboratories and Head Office:
65 Macquarie Street, Sydney, Australia.
Telephone: B 6257 (3 lines)
Telegraphic and Cable Address: Glandular, Sydney

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 16, 1946. No. 7.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

Ascorbic Acid in the Milk of Melbourne Women, by Dora Winikoff, M.Sc. 205
Chylangioma of the Mesentery, with Report of a Case, and a Brief Discussion of Mesenteric Cysts, by G. C. V. Thompson, F.R.C.S., and C. H. Chambers, M.B., B.S. 210
The Treatment of Hæmophilus Influenzæ Meningitis with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum, by E. A. North, Harold Wilson and G. Anderson 215
A Report on Sixteen Cases of Supraglottic Œdema, by H. McLorinan 220
The Study of the Human Body after Death, by Keith Inglis, M.D. 222

REPORTS OF CASES—

Volkmann's Ischæmic Contracture of the Forearm, by Leonard Ball, F.R.C.S., F.R.A.C.S. 224
Unknown Foreign Bodies in the Lung, by J. B. Cleland 225
Tetanus Treated with Penicillin; Recovery, by John L. Grove 226

REVIEWS—

Dermatology 227
Surgery of the Rectum 228
Diseases of the Chest 228

LEADING ARTICLES—

"Paludrine" 229
The Federal Medical War Relief Fund 229

CURRENT COMMENT— Page.

Retropubic and Extravesical Prostatectomy 230

ABSTRACTS FROM MEDICAL LITERATURE—

Gynæcology 232
Obstetrics 233

SPECIAL ARTICLE—

Researches on "Paludrine" (M.4888) in Australia .. 234

BRITISH MEDICAL ASSOCIATION NEWS—

Notice 236

SPECIAL CORRESPONDENCE—

Canada Letter 236

CORRESPONDENCE—

Tuberculosis Patients and Hospitals 237
The Intervertebral Disk 237
The Surgical and Applied Anatomy of the Inguinal Region 237

OBITUARY—

Andrew Eric Aspinall and Archibald John Aspinall 238
George McLean 240

NAVAL, MILITARY AND AIR FORCE—

The Training Prior to Discharge of Certain Service Medical Officers 240
NOMINATIONS AND ELECTIONS 240
BOOKS RECEIVED 240
DIARY FOR THE MONTH 240
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 240
EDITORIAL NOTICES 240

ASCORBIC ACID IN THE MILK OF MELBOURNE WOMEN.

By DORA WINIKOFF, M.Sc. (Cracow),

From the Department of Biochemistry, University of Melbourne.

As a sequel to the work on the mineral content of breast milk,(1) an investigation was carried out on the ascorbic acid content of maternal milk in the Melbourne area.

Literature.

In man, according to Boyle,(2) normal ascorbic acid nutrition is essential for the maintenance of the tissues by which the teeth are attached to the jaws. Loosening of the teeth in ascorbic acid deficiency is the result of atrophy of such tissues. This author also considered such suboptimal ascorbic acid nutrition to be an underlying factor in the production of systemic pyorrhœa. Moreover, in infants and children receiving enough vitamin *C* for protection against scurvy, there may still develop a condition of latent or subacute scurvy accompanied by more or less severe injury to the teeth (Smith(3)). It thus becomes apparent that larger quantities of vitamin *C* are required for good nutrition than for the prevention of scurvy. For this reason, and in view of the widespread occurrence of dental caries in this country, there is an urgent necessity to safeguard the proper vitamin *C* nutrition of infants and children.

It has been proved beyond any doubt that artificially fed infants need a vitamin *C* supplement as early as the first week of life, owing to the low content of this vitamin in cow's milk compared with that in human milk. The practice of giving even breast-fed children orange juice after the first six months has also been adopted in this country. The question arises, however, whether in all cases there is an adequate vitamin *C* intake during the first six months of breast feeding.

The possibility that the infant has the ability of synthesizing vitamin *C* up to its tenth month of life, as suggested by Rohmer and Bezssonoff(4) and by Stoerr,(5)(6) has been denied by Wachholder,(7) by Ferdinand,(8) by Muller,(9) by Neuweiler(10) and others, who express the opinion that although after birth the infant possesses a store of vitamin *C* which enables it to cover the deficit for some time, its only source of intake is breast milk.

According to Elmby *et alii*,(11) Baumann(12) and others, the ascorbic acid content of milk follows closely that of blood, which in turn is completely dependent on the diet of the nursing mother (Baumann and Rappolt,(13) Gedd and Kjelberg(14)).

Numerous experiments have been carried out to raise the ascorbic acid level in milk by means of a high vitamin *C* intake, either in the food or by the administration of the synthetic vitamin. The general belief is that the lactating mother has no special storage capacity for vitamin *C* once the saturation point has been reached (Neuweiler(15) Chu *et alii*,(16) Baumann(12)), although during lactation the body appears to store vitamin *C* for longer periods than usual (Baumann and Rappolt(13)). To quote from Baumann:(12)

> There is no lower threshold for secretion from blood into milk and it goes on until the maternal organism is greatly depleted, but there is an upper limit of about 8 mg. per cent. in milk. There is no upper limit for secretion into urine, but there is a lower limit about 1-1·4 mg. per cent. in blood.

However, with regard to the question of the ascorbic acid level in milk in the case of a deficiency in the diet, Laurin(17) and Widenbauer and Rappolt (see Laurin(17)) think that the amount available can if necessary be supplied to the child by means of breast milk, even at the cost of the mother's own need of this vitamin. Gaehtgens and Werner,(18) on the other hand, express the opinion that when the daily requirements are not covered the mother's organism becomes depleted during gestation, but during lactation the infant is the sufferer, since the ascorbic acid content of the milk falls and the mother is thereby protected.

In view of this controversy it seems to be advisable to supplement the possible deficiency in milk by giving orange juice or other easily assimilated source of vitamin *C* direct to the infant rather than to the mother. However, as Smith(3) recommends, no harm is done if the intake of the nursing mother is doubled during the period of considerable drain on her resources.

Daily Requirements of Mother and Infant.

The Technical Committee on Nutrition of the League of Nations(19) has estimated the vitamin *C* requirements of artificially fed infants to be five to fifteen milligrammes per day. The majority of investigators, however, taking the average vitamin *C* intake of a breast-fed infant nursed by a mother receiving a satisfactory diet, consider this amount inadequate. Young(21) and Hess and Benjamin(22) recommend the daily allowance of 7·5 to 20 milligrammes to prevent avitaminosis, whilst Wachholder(7) considers 10 to 15 milligrammes per day as an absolute minimum. Smith,(3) summarizing the results of several investigators, estimates the daily requirements of an infant as five to eight milligrammes of ascorbic acid per kilogram of body weight, based on a daily intake during the first few months of 500 to 1,000 mils of milk with an ascorbic acid content within the range of four to seven milligrammes *per centum*. A concentration below four milligrammes *per centum* is regarded by this author and others as an indication of vitamin *C* deficiency in the tissues of lactating women.

Table I shows the respective daily intakes of mother and infant and the percentage of ascorbic acid in milk as given by different authors.

TABLE I.

Author.	Daily Intake of Ascorbic Acid.		Ascorbic Acid in Milk. (Milligrammes *per Centum*.)
	Mother.	Infant.	
Widenbauer and Kuhner	80 to 100 milligrammes	40 to 50 milligrammes	—
De Haas and Meulemans(33)	Adequate	40 milligrammes	4 to 5
Toverud(50)	100 milligrammes	25 to 30 milligrammes	6 to 7
Baumann(12)	50 milligrammes	8 to 14 milligrammes	—
Chu, Woo and Sung(15) ..	82 milligrammes	Adequate	—
Ingalls *et alii*(39)	—	28 milligrammes	4 to 5
Ingalls(30)	—	20 to 40 milligrammes	4
Selleg and King(29) ..	—	40 to 50 milligrammes	6 to 8
Braëstrup(42)	Adequate	3 to 8 milligrammes per kilogram of body weight	—
Bessey(23)	Adequate	20 to 40 milligrammes	—
Baumann(12)	70 milligrammes	—	4

Materials and Methods.

The investigation was carried out during the spring and summer of 1942-1943. The samples were taken at the Women's Hospital, Melbourne, and at several baby health centres and homes for mothers and babies. They represented mostly the lower and middle income groups.

The source of material and the method of collection of milk samples were the same as in the previous work.(1) Milk was collected in small, brown, glass-stoppered bottles, transferred to a black box and immediately taken to the laboratory. The estimation was carried out not later than two hours after collection.[1]

Tillman's method of estimation, as modified by Bessey,(23) was used, but as the end-point presented considerable difficulties, Kuhn's(24) back titration with Mohr's salt solution was applied and gave satisfactory results.[2]

Reagents.

The ascorbic acid solution was prepared as follows: 0·002 to 0·004 gramme was made up to 100 millilitres with 3% metaphosphoric acid solution.

The 2-6-dichlorophenol-indophenol was made up as follows: 0·01 gramme was dissolved in hot water. After cooling, 10 millilitres of phosphate buffer solution at pH 6·8 were added and the total volume was made up to 100 millilitres. The buffer solution consisted of 15·45 millilitres of 0·2 molar sodium phosphate solution and 4·55 millilitres of 0·1 molar citric acid solution kept over chloroform.

Mohr's stock solution was prepared in the following way: 0·1 gramme of ammonium ferrous sulphate (C.P.) was dissolved in water with two millilitres of concentrated sulphuric acid and made up to 100 millilitres. For titration 10 millilitres of the stock solution were diluted to 100 millilitres.

All reagents were made up freshly as required with glass-distilled water and kept in brown bottles in a refrigerator.

The dye solution was standardized every day according to the method of Bessey and King(25) with pure ascorbic acid solution, pH 1·5 to 2·0. (According to King,(26) the pH of the end-point should be kept below 3·5 to obtain satisfactory results.)

The Mohr's salt solution was in turn standardized every day against the dye, as described by Lorenz and Arnold.(27)

Technique.

To five millilitres of milk (in duplicate) five millilitres of metaphosphoric acid were added and titrated with the dye solution from a microburette till the appearance of the first pink colour. An excess of dye was then added and the back titration with Mohr's salt solution was carried out drop by drop till the pink colour completely disappeared. As the Mohr's salt solution was prepared so that 10 millilitres corresponded to three to four millilitres of dye, the accuracy of estimating the end-point was greatly increased.

TABLE II.

Variations in Ascorbic Acid Content of Different Portions of the Same Milk. (*Milligrammes* per Centum.)

Type of Milk.	Number of Sample.								
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
First milk	0·84	4·02	6·15	1·58	6·52	3·67	5·22	3·95	3·35
Middle milk	0·78	3·68	—	1·55	6·57	3·65	5·78	3·73	—
End milk	0·79	3·66	5·93	1·49	6·49	—	—	3·70	3·42

---

[1] To estimate the loss of vitamin *C* caused by cool storage, several samples were mixed with equal volume of a 3% solution of metaphosphoric acid, placed in a blackened, evacuated desiccator, and left for twenty-four hours in a refrigerator. Under these conditions the loss of vitamin *C* was from 2% to 7%.

[2] As the full description of Kuhn's method was unobtainable, the details of this modification had to be worked out by the writer.

Preliminary Work.

As many authors point out, there are great variations in the ascorbic acid content of milk occurring one day and from day to day. Differences have also been found in milk from different breasts and in various portions of the same milk. In view of this variability preliminary tests were made to ascertain whether the method of collecting and sampling caused any additional errors.

Nine milk samples were taken in two or three portions, as the first, the middle, and the end milk. The results given in Table II show certain fluctuations; but the statement by Schlemmer *et alii*(28) that the end milk is richer in vitamin *C* than the first or middle milk was not substantiated. There was also no significant difference between portions of milk taken from different breasts, as is indicated in Table III.

Table III.

Variation in Ascorbic Acid Content of Milk from Different Breasts (Milligrammes per Centum.)

Breast.	Sample.			
	I.	II.	III.	IV.
Left	4·02	6·57	4·08	3·53
Right	4·19	6·49	4·12	3·65

The day-to-day variations in individual samples were considerable, but they were much smaller when taken as averages of a number of samples (see Table IV). These samples were taken during the colostral period between the fifth and tenth days. Apart from the results on the sixth day the differences were small. Selleg and King(29) obtained similar results.

Table IV.

Day-to-day Variations Taken on a Number of Samples (Colostral Period).

Day *Post Partum.*	Mean Value of Ascorbic Acid. (Milligrammes *per Centum.*)	Number of Samples.
5th	3·91	43
6th	3·41	45
7th ..	4·13	47
8th	4·12	29
9th	4·13	17
10th	3·79	22

Main Investigation.

Over 500 samples of milk from normal and abnormal women were examined. They included (i) colostral and (ii) mature milk.

Colostral Period.

Two hundred and eight samples from 186 normal mothers were examined between the fifth and tenth days *post partum*. From some of the patients several samples were taken on different days, always at the same feeding time.

The ascorbic acid content of milk ranged from 0·86 to 7·40 milligrammes *per centum*, the mean value being 3·87 milligrammes *per centum* and the standard deviation being 1·45. The frequency distribution curve had a normal appearance.

Fifty samples from 36 mothers suffering from toxæmia, albuminuria or post-partum eclampsia and from women whose babies had been born prematurely, were taken between the third and eleventh days after confinement. The mean value, which was 3·94 milligrammes *per centum* for all cases, and 4·00 milligrammes *per centum* for the 23 cases of prematurity, did not differ greatly from the mean for normal cases (contrary to Elmby(11) and Correns,(30) who investigated only a small number of cases). The results did not include the figures of 9·37 milligrammes *per centum* and 6·30 milligrammes *per centum* (average of three estimations) obtained from two patients kept on a diet rich in vitamin *C*.

Mature Milk.

Samples numbering 261 from 186 normal mothers were taken at intervals of one month throughout the whole remaining period of lactation. The ascorbic acid content ranged from 0·39 to 7·74 milligrammes *per centum*. The mean value for the whole period was 3·67 milligrammes *per centum*. A single sample with ascorbic acid content of 9·37 milligrammes *per centum* (see above) was not included. The frequency distribution curve had a normal appearance.

The mean value for individual months of lactation (see Table V) rose slightly from the colostral period, remained constant during the first and second months, then gradually fell, and after reaching its lowest level during the sixth month, slowly rose again and regained its former level during the ninth and tenth months. Although its range of variations (2·99 to 4·01 milligrammes *per centum*) was small in comparison with that of individual samples, the results were statistically examined by the application of the t-test. The mean values for each of the first two months were identical. The differences between these values and those for each successive month up to the sixth proved to be statistically significant. This indicated a fall in ascorbic acid value of milk with the progress of lactation. The seasonal variations could not be mainly responsible for this fall, as in every group of samples taken during the same stage of lactation several were taken during each of the calendar months of spring and summer. The rise after the sixth month could be explained by the fact that the child, being put on "educational diet", consumed less breast milk, and the concentration of ascorbic acid rose with the decrease in volume secreted, which automatically followed the smaller intake by the child.

The mean value for colostral milk was slightly higher than that for the mature milk taken as a whole, but not in comparison with each individual month of lactation. Among overseas workers, Bleyer,(31) Schlemmer *et alii*,(28) Kasahara and Kawashima,(32) Wachholder,(7) de Haas and Meulemans(33) and Stoerr(34) found the ascorbic acid content higher in colostrum than in mature milk, while Neuweiler(35) and Winkler and Heins(36) could find no difference in the two values. Schlemmer *et alii*,(28) Kasahara and Kawashima,(32) and Wachholder and Correns(30) noticed a fall in ascorbic acid value of milk while the lactation proceeded. Bleyer,(31) Neuweiler,(35) Winkler and Heins,(36) on the other hand, consider the level to be constant, provided that there is no vitamin *C* deficiency in the mother's diet.

Table V.

The Ascorbic Acid Content of Milk According to the Month of Lactation.

	Month.												
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th
Ascorbic acid (milligrammes *per centum*)	4·00	4·01	3·31	3·12	3·28	2·99	3·37	3·21	4·03	3·91	3·60	4·76	4·59
Number of samples	45	48	37	30	20	18	11	14	9	8	6	5	1
Standard deviation	1·60	1·69	1·33	1·21	1·04	1·11	1·23	1·13	1·39	1·00	1·60	—	—

Seasonal Changes.

To obtain a picture of the seasonal fluctuation the results were regrouped according to the calendar month. Colostral and mature milk, however, was treated separately as representing different time intervals in lactation periods (see Tables VI and VII).

TABLE VI.
The Ascorbic Acid Content of Colostral Milk During the Spring and Summer Months.

Month.	Ascorbic Acid. (Milligrammes *per Centum.*)	Number of Samples.
September ..	4·41	50
October ..	3·51	54
November ..	4·18	65
December ..	4·00	24
January ..	4·10	23

TABLE VII.
The Ascorbic Acid Content of Mature Milk During the Spring and Summer Months.

Month.	Ascorbic Acid. (Milligrammes *per Centum.*)	Number of Samples.
September ..	4·12	47
October ..	3·68	33
November ..	3·28	38
December ..	3·82	32
January ..	3·75	37
February ..	3·56	71

The ascorbic acid content was lowest in October for colostral milk and in November for mature milk, while in both it was highest in September. The colostral period, which represented a large number of samples taken at the same stage of lactation, was chosen for statistical analysis. This revealed a significant difference between the mean values for September and October and for October and November, while the differences between the other months were not statistically significant.

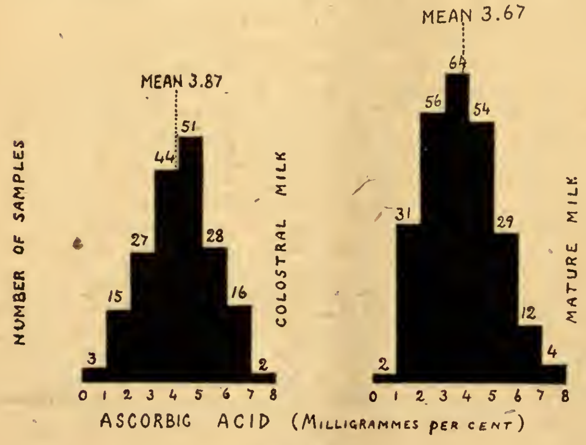


FIGURE I.
Frequency distribution histiograms.

There is no real scarcity of fruit and vegetables throughout the year in the Melbourne area; but during the month of October, 1942, owing to war conditions, citrus fruits and green vegetables were in short supply, while potatoes were not available until the middle of November, when the new crop arrived. This coincided with the significant drop in ascorbic acid value. Although no estimations were made during the winter months in the course of this investigation, it might be expected that under normal conditions the values during this period would have fallen to the level of October, 1942, or below.

Discussion and Conclusion.

During the last decade numerous publications have appeared in the scientific literature concerning the vitamin *C* content of breast milk in different countries. Unfortunately, owing to war conditions, many of these publications have been available only by title or in the form of short abstracts. Furthermore, as many of the authors based their results on a small number of samples, only those publications were selected which could give reliable information on the vitamin *C* level of breast milk in their respective countries.

The results are summarized below.

Colostral Milk.

The figures recorded were as follows: Selleg and King,(29) 5·5 milligrammes *per centum* (53 samples); Gaehtgens and Werner,(18) 1·8 to 7·6 milligrammes *per centum* (set groups of 10 to 20 samples); Kasahara and Kawashima,(32) 7·0 to 8·0 milligrammes *per centum* (122 samples).

Mature Milk.

The figures recorded were as follows: Harris and Ray(37) (London), 5·6 milligrammes *per centum* (135 samples); Kasahara and Kawashima(38) (Japan), 4·5 milligrammes *per centum* ("a number"); Laurin(17) (Sweden), 3·0 to 7·0 milligrammes *per centum* (55 samples); Gedd and Kjelberg(14) (Gottenburg), 3·9 milligrammes *per centum* (421 samples); Ingalls *et alii*(39) (United States of America), 4·5 milligrammes *per centum* ("a number"); El-Gholmy(40) (Cairo), 3·8 milligrammes *per centum* (140 samples); Isono(41) (Japan), 3·5 milligrammes *per centum* (57 samples).

In addition, a few other publications were selected in which the results, although based on a small number of samples or given without the number of samples examined, were nevertheless of some interest. They are as follows: Braestrup and Lieck(42) (Copenhagen), 2·0 to 6·0 milligrammes *per centum*; Traversaro and Quesada(43) (Argentina), 5·0 milligrammes *per centum* (six samples); de Haas and Meulemans(33) (Batavia), 4·0 to 5·0 milligrammes *per centum* (native women), 6·0 to 7·0 milligrammes *per centum* (European women); Cimmino(44) (Italy), 2·7 milligrammes (five samples); Concepcion and Gargaritano(45) (Philippines), 4·0 to 5·0 milligrammes *per centum*; Sapegno and Mado(46) (Turin), 4·0 to 5·0 milligrammes *per centum*; Chakraborty(47) (Calcutta), 5·0 milligrammes *per centum*; Kroker(48) and Elmby,(11) who give respectively 2·2 to 4·2 milligrammes *per centum* for low income groups and 8·7 milligrammes and over 7·0 milligrammes *per centum* for high income groups.

Seasonal Changes.

All authors agree that the vitamin *C* value of milk undergoes certain seasonal variations, particularly in countries where there is a shortage of fresh fruit and vegetables in winter-time. Sinkko,(49) in Finland, who investigated the ascorbic acid content of the milk of ten women throughout the year, found that it was low in winter-time. High values were obtained in August and September, but there was a fall in October and November; the lowest value of 1·76 milligrammes *per centum* was reached in February, as compared with 4·63 milligrammes *per centum* in September. The variations in the infant mortality rate during the year are correlated by Sinkko with the seasonal variations in the content of breast milk. Winkler and Heins(36) found the values to be 4·6 to 6·6 milligrammes *per centum* in summer and 2·9 to 5·2 milligrammes *per centum* in winter, and Gedd and Kjelberg(14) (Gottenburg) found the values to be 4·2 milligrammes *per centum* in autumn and 3·6 milligrammes *per centum* in spring. Baumann(12) (Switzerland) reported for the period from November to January a range of 2·5 to 3·0 milligrammes *per centum*, and for the period from June to October (summer) 4·0 to 7·5 milligrammes *per centum*. He noticed an unexpected rise after January (February to May, 3·5 to 5·7 milligrammes *per centum*) due to the arrival of imported citrus fruit. Ferdinand(8) (Rostock, Germany) found values of 3·5 milligrammes *per centum* for winter and

2·1 milligrammes *per centum* for early spring, while Correns(30) (Rostock) found values of 3·93 milligrammes *per centum* for summer. The results for summer and winter in Rostock were thus not greatly different, owing to the availability of a good supply of food rich in vitamin *C*. The low values for early spring would coincide with the period in central Europe during which fresh greens or other sources of the vitamin are scarce.

Comment.

Compared with most of the reliable overseas reports, the average ascorbic acid content of breast milk in the Melbourne area, ranging from 3·0 to 4·0 milligrammes *per centum* throughout the whole lactation period, is low even during the summer months.

According to Ingalls,(20) Smith(3) and others, in order to assure a daily supply of 20 to 40 milligrammes, which is essential for adequate nutrition of the infant, the ascorbic acid content of milk must not fall below the level of 4·0 milligrammes *per centum*. In the Melbourne area the average value just reached this level only during the first two months of lactation. During the remaining four months until the infant began, or should have begun, to receive the orange juice, the level was found to decline to 2·99 milligrammes *per centum*.

The frequency distribution histograms (Figure I) reveal that in about 50% of cases during the colostral period and in about 60% in the later stages the level was below 4·0 milligrammes *per centum*. This means that more than half of the breast-fed infants in the lower and medium income groups received a diet deficient in vitamin *C* even during the summer months, while those babies receiving pooled mother's milk or cow's milk supplement had an even lower vitamin intake. The histograms also indicate that a large portion of the adult female population had a subclinical vitamin *C* deficiency.

Therefore it seems to be of great importance to give both the mother and the breast-fed infant orange juice or synthetic vitamin *C* as early as the first few weeks after the mother's confinement.

Summary.

1. Preliminary work was carried out as follows. (*a*) Nine milk samples were examined in two or three portions. The end milk was not richer in ascorbic acid than the middle or first milk. (*b*) Four milk samples were taken from both breasts and found to have the same ascorbic acid content within the limits of experimental error. (*c*) A number of samples was studied during the colostral period on six consecutive days. The differences between the averages of a number of samples were much smaller than the day-to-day variations in individual samples.

2. During the colostral period 208 samples from 186 healthy mothers were examined between the fifth and tenth days *post partum*. The ascorbic acid content of milk ranged from 0·86 to 7·40 milligrammes *per centum*, the mean value being 3·87 milligrammes *per centum* and the standard deviation 1·45.

3. Fifty milk samples from 36 mothers suffering from toxæmia, albuminuria and post-partum eclampsia, and from mothers of premature infants, were examined between the third and eleventh days *post partum*. The mean value was 3·94 milligrammes *per centum* for all the women and 4·00 milligrammes *per centum* for the 23 with premature infants. These figures do not differ greatly from the values for normal women.

4. Samples numbering 261 from 186 healthy mothers were taken at intervals of one month during the whole period of lactation. The ascorbic acid content ranged from 0·39 to 7·74 milligrammes *per centum*. The mean value for the whole period was 3·67 milligrammes *per centum*. The mean values for individual months rose slightly from the colostral period, remained constant during the first and second months and gradually fell, reaching the lowest level of 2·99 milligrammes *per centum* during the sixth month, and then rose again.

5. The differences between the third, fourth, fifth and sixth months as compared with the first two months proved to be statistically significant, indicating a fall in ascorbic acid level with the progress of lactation up to the sixth month.

6. The mean value for colostral milk was slightly higher than that for the mature milk taken as a whole, but not in comparison with the figures for each individual month of lactation.

7. The results, regrouped according to the calendar month, have shown a significant fall in vitamin *C* content for colostral milk in October and for mature milk in November, which coincided with the shortage of potatoes and fresh vegetables.

8. The average ascorbic acid content of milk in the Melbourne area, ranging from 3·0 to 4·0 milligrammes *per centum*, was low in comparison with the figures obtained in other countries.

9. The frequency distribution histograms revealed that from 50% to 60% of breast-fed babies in the lower and middle income groups did not receive an adequate amount of vitamin *C* during their first six months of life, as 4·0 milligrammes *per centum* is considered the minimum ascorbic acid concentration in milk necessary for normal nutrition.

10. The writer considers that it is urgent to administer some vitamin *C* supplement even to breast-fed babies as early as the first few weeks of life.

Acknowledgements.

The writer wishes to thank Dr. V. Scantlebury-Brown, Dr. H. Kincade, and Dr. K. Campbell for advice and practical assistance, also Dr. M. Mackie and the staff of the Women's Hospital; Sister E. Smith, Sister Kramer, Sister Murphy, Sister Leany and Mrs. Hancock, of the baby health centres; the matrons and staff of the "Carlton Home", "Kiddish" and "The Haven" for facilities in collecting samples; and Professor V. M. Trikojus for criticism and advice.

References.

(1) D. Winikoff: "Calcium, Magnesium and Phosphorus in the Milk of Australian Women", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1944, page 660.

(2) P. Boyle: "Vitamin C and Dental Caries", *The Journal of Pediatrics*, Volume XII, 1938, page 415.

(3) S. L. Smith: "Human Requirements of Vitamin C", *The Journal of the American Medical Association*, Volume CXI, 1938, page 1753.

(4) P. Rohmer and N. Bezssonoff: *La Nature*, Volume II, 1934, page 142; quoted by Wachholder, *loco citato*.

(5) P. Rohmer, N. Bezssonoff and E. Stoerr: *"La teneur particulièrement élevée du liquide céphalorachidien en vitamine C chez le prématuré et le nouveau-né normal", Comptes rendus des séances de la Société de biologie de Paris,* Volume CXXI, 1936, page 987; quoted by Muller, *loco citato*.

(6) P. Rohmer, N. Bezssonoff and E. Stoerr: *"L'influence des facteurs non alimentaires sur la synthèse de la vitamine C par l'organisme animal", Comptes rendus des séances de la Société de biologie,* Volume CXVIII, 1935, page 58; quoted by Ferdinand, *loco citato*.

(7) K. Wachholder: *"Die Versorgung des Säuglings mit Vitamin C", Klinische Wochenschrift,* Volume XV, 1936, page 593.

(8) H. Ferdinand: *"Der Vitamin C Gehalt der Frauenmilch und der Kuhmilch in der Frühjahrmonaten", Klinische Wochenschrift,* Volume XV, 1936, page 1311.

(9) J. Muller: *"Der Vitamin C Austausch zwischen Mutter und Fetus", Klinische Wochenschrift,* Volume XVIII, 1939, page 299.

(10) W. Neuweiler: "Vitamin C Metabolism of Newborn Children", *Zeitschrift für Vitaminforschung,* Volume VI, 1937, page 75; quoted in *Nutrition Abstracts and Reviews,* Volume VII, 1937-1938, page 181.

(11) A. Elmby and P. Becker-Christensen: *"Über das Verhalten der Ascorbinsäure in der Schwangerschaft unter der Geburt, während des Wochenbetts und in ersten Lebenstagen des Kindes", Klinische Wochenschrift,* Volume XVII, 1938, page 1432.

(12) T. Baumann: "Vitamin C Metabolism of Lactating Women. Physiological and Pathological Degree of Saturation of the Human Organism with Vitamin C", *Jahrbuch der Kinderheilkunde,* Volume CL, 1937, page 193; quoted in *Nutrition Abstracts and Reviews,* Volume VII, 1937-1938, page 1083.

(13) T. Baumann and L. Rappolt: "Vitamin C Metabolism", *Zeitschrift für Vitaminforschung,* Volume VI, 1937, page 1; quoted in *Nutrition Abstracts and Reviews*, Volume VII, 1937-1938, page 181.

(14) E. Gedd and K. Kjelberg: "The Vitamin C Content in the Breast Milk of Mothers in Gothenburg", *Acta Pediatrica,* Volume XXVI, 1939, page 177.

(15) W. Neuweiler: *"Die Vitamin der Milch unter besonderem Berücksicht der Frauenmilch",* 1936; quoted by Gedd and Kjelberg", *loco citato*.

(16) F. T. Chu, T. Woo and C. Sung: "A Study of Vitamin C Metabolism in Lactating Mothers", *Chinese Journal of Physiology,* Volume XIII, 1938, page 383; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 1086.

(17) I. Laurin: "Some Ascorbic Acid Saturation Tests on Infants", Lecture to the South Swedish Pediatric Society, 1937; quoted by Gedd and Kjelberg, *loco citato.*

(18) G. Gaethgens and E. Werner: "Administration of Vitamin C to Nursing Mothers", *Archiv für Gynäkologie,* Volume CLXV, 1937, page 63.

(19) Report of the Technical Committee on Nutrition of the League of Nations, December, 1937; quoted by Smith, *loco citato,* and Ingalls, *loco citato.*

(20) T. H. Ingalls: "Ascorbic Acid Requirements in Early Infancy", *The New England Journal of Medicine,* Volume CCXVIII, 1938, page 872; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 1080.

(21) Z. Jung: *Zeitschrift für Vitaminforschung,* Volume I, 1932, page 294; quoted by Wachholder, *loco citato.*

(22) A. F. Hess and H. R. Benjamin: "Urinary Excretion of Vitamin C", *Proceedings of the Society for Experimental Biology and Medicine,* Volume XXXI, 1934, page 855; quoted by Wachholder, *loco citato.*

(23) O. A. Bessey: "Use and Abuse of Vitamin C Determination", *The Journal of Pediatrics,* Volume XII, 1938, page 415.

(24) A. Kuhn: "The Technique of Vitamin C Estimation by Dichlorophenolindophenol Method", *Klinische Wochenschrift,* Volume XX, 1941, page 1174; quoted in *Nutrition Abstracts and Reviews,* Volume XI, 1941-1942, page 576.

(25) O. A. Bessey and C. G. King: "The Distribution of Vitamin C in Plant and Animal Tissues and its Determination", *The Journal of Biological Chemistry,* Volume CIII, 1933, page 687.

(26) C. G. King: "Chemical Methods for Determination of Vitamin C", *Industrial and Engineering Chemistry, Analytical Edition,* Volume XIII, 1941, page 13.

(27) A. J. Lorenz and L. J. Arnold: "Standardisation of 2,6-Dichlorophenol-indophenol with Ferrous Compounds", *Industrial and Engineering Chemistry, Analytical Edition,* Volume X, 1938, page 687.

(28) F. Schlemmer, B. Bleyer and H. Cahermann: *"Studien über biochemische Aktivatoren der Milch", Biochemische Zeitschrift,* Volume CCLIV, 1932, page 187.

(29) E. Selleg and C. G. King: "The Vitamin C Content of Human Milk and its Variation with Diet", *The Journal of Nutrition,* Volume II, 1936, page 599.

(30) A. E. Correns: *"Die Vitamin C Gehalt der Frauenmilch und der Kuhmilch im Sommer", Klinische Wochenschrift,* Volume XVI, 1937, page 81.

(31) B. Bleyer: *"Die Bestimmung von Vitamin C Antiscorbutic in Milch", Münchener medizinische Wochenschrift,* Volume LXXX, 1933, page 257; quoted in *Nutrition Abstracts and Reviews,* Volume III, 1933-1934, page 420.

(32) M. Kasahara and K. Kawashima: *"Beitrag zur Kenntnis des Vitamin C Gehalts in der Colostralmilch", Klinische Wochenschrift,* Volume XV, 1936, page 1279.

(33) J. H. de Haas and O. Meulemans: "The Ascorbic Acid (Vitamin C) Content of Mother's Milk in Batavia", *The Indian Journal of Pediatrics,* Volume III, 1936, page 216; quoted in *Nutrition Abstracts and Reviews,* Volume VI, 1936-1937, page 976.

(34) E. Stoerr: "Milk as a Source of Vitamin C, Human and Cow's, Raw and Heated. Seasonal Variations, etc.", *Revue française de pédiatrie,* Volume XII, 1936, page 427; quoted in *Nutrition Abstracts and Reviews,* Volume V, 1936-1937, page 660.

(35) W. Neuweiler: "Vitamin C Content of Human Milk", *Zeitschrift für Vitaminforschung,* Volume IV, 1935, page 39; quoted in *Nutrition Abstracts and Reviews,* Volume V, 1935-1936, page 91.

(36) H. Winkler and E. Heins: *"Der Askorbinsäuregehalt der Frauenmilch im Sommer und Winter", Zeitschrift für die Geburtshülfe und Gynäkologie,* Volume CXVII, 1938, page 148; quoted by Gedd and Kjelberg, *loco citato.*

(37) L. J. Harris and S. N. Ray: "Diagnosis of Vitamin C Subnutrition by Urine Analysis. Antiscorbutic Value of Human Milk", *The Lancet,* Volume I, 1935, page 171.

(38) M. Kasahara and K. Kawashima: "Seasonal Variations in the Vitamin C Content of Human Milk", *Zeitschrift für Kinderheilkunde,* Volume LVIII, 1936, page 191; quoted in *Nutrition Abstracts and Reviews,* Volume VI, 1936-1937, page 660.

(39) T. H. Ingalls, R. Draper and H. M. Teel: "Vitamin C in Human Pregnancy and Lactation. (2) Studies during Lactation", *American Journal of Diseases of Children,* Volume LVI, 1938, pages 1004 and 1011; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 1085.

(40) P. A. El-Gholmy: "The Ascorbic Acid Content of Human Milk and the State of Vitamin C Nutrition of Children Attending the Child Welfare Centre, Fouad I Hospital", M.D. Thesis, Fouad I University, Cairo, Egypt; quoted in *Nutrition Abstracts and Reviews,* Volume IX, 1939-1940, page 729.

(41) S. Isono: "Arakawa Reaction and Vitamin C Content of Human Milk", *Tohoku Journal of Experimental Medicine,* Volume XXXV, 1939, page 480.

(42) P. W. Braëstrup and H. Lieck: "Biological Estimation of Vitamin C in Breast Milk", *Hospitalstidende,* Volume LXXXI, 1938, page 913; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 652.

(43) J. C. Traversaro and R. Quesada: "Vitamin C in Human Milk", *Revista de la Asociación bioquimica argentina,* Volume III, 1938, page 7; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 1087.

(44) A. Cimmino: "Vitamin C in Human and Cow's Milk and the Milk of Other Mammals", *Quaderni della Nutrizione,* Volume V, 1938, page 239; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 696.

(45) I. Concepcion and M. L. Gargaritano: "Studies on Vitamin C", *The Journal of the Philippine Islands Medical Association,* 1939, page 19; quoted in *Nutrition Abstracts and Reviews,* Volume IX, 1939-1940, page 93.

(46) Sapegno and Mado: *Archivio italiano di pediatria e puericultura,* Volume II, 1934, page 724; quoted by Elmby, *loco citato.*

(47) R. K. Chakraborty: "Vitamin C Content of Some Indian Food-Materials", *The Indian Journal of Medical Research,* Volume XXIII, 1935, page 347; quoted by Elmby, *loco citato.*

(48) F. Kroker: "Vitamin C in Cow's and Human Milk", *Milchwirtschaft Forschungen,* Volume XIX, 1938, page 318; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 652.

(49) E. I. Sinkko: "Relation between Infantile Mortality and Variations in the Vitamin C Content of the Mother's Milk at Various Seasons of the Year in Finland", *Acta Pediatrica,* Volume XXI, 1937, page 407; quoted in *Nutrition Abstracts and Reviews,* Volume VIII, 1938-1939, page 201.

(50) K. Utheim-Toverud: "The Vitamin C Requirements of Pregnant and Lactating Women", *Zeitschrift für Vitaminforschung,* Volume VIII, 1939, page 237; quoted in *Nutrition Abstracts and Reviews,* Volume IX, 1939-1940, page 189.

CHYLANGIOMA OF THE MESENTERY, WITH REPORT OF A CASE, AND A BRIEF DISCUSSION OF MESENTERIC CYSTS.

By G. C. V. THOMPSON, F.R.C.S. (Edinburgh),
Squadron Leader, Royal Australian Air Force,

and

C. H. CHAMBERS, M.B., B.S.,
Flight Lieutenant, Royal Australian Air Force.

(From the Surgical Division of a Royal Australian Air Force Hospital.)

A CHYLANGIOMA of the mesentery has been defined by Ewing(1) as a cavernous lymphangioma containing milky fluid, which arises from congenital or acquired obstruction of the lacteal vessels. Chylangioma constitutes one type of true mesenteric cyst, in that it conforms to the definition of a mesenteric cyst given by Higgins and Lloyd,(2) who held that mesenteric cysts were cysts which occurred in or near the mesentery, which were not malignant, dermoid or parasitic, and which did not arise from any normally placed retroperitoneal organ.

Great interest has been shown in the study of mesenteric cysts since the discovery at autopsy, by Benevieni, of the first recorded mesenteric cyst in 1507. The history of the knowledge accumulated in respect to cysts of mesenteric origin is extensively reported; the reviews of Warfield,(3) Swartley,(4) and Roller(5) may be quoted as adequately summarizing the historical aspect.

Of all the abdominal tumours, Flynn(6) considers those of the mesentery to be the rarest. Mesenteric cysts are uncommon, Warfield estimating that only about 500 cases of mesenteric cyst have been reported in the literature. Among these cases, Slocum(7) states that less than 300 true mesenteric cysts have been reported, and that the number of true chylous cysts of the mesentery of sufficient size to cause symptoms would be no greater than 200. Parsons,(8) after reviewing the literature, states that there are records of only ten cases of mesenteric cyst with gross and microscopic appearances of true proliferating cystic lymphangioma, although the criteria on which this assertion is made are not definitely enumerated in the article. It appears to us that the condition is more common than these figures lead one to believe, but, because lymphangiomata (or chylangiomata) are still rare, we venture to report a case of this type of cyst which we regard as a true chylangioma.

The frequency with which mesenteric cysts are found can be judged from a review of the medical literature which contains statistical surveys. At the University of Minnesota, Collins and Berdez(9) found no case of mesenteric cyst in 15,000 autopsies, and only two cases of chyle cysts were found in the clinical records of 200,000 cases. These figures are comparable with the records of the Mayo Clinic, where Crisp and Judd(10) found the histories of eight cases of cysts amongst 25 mesenteric tumours in 820,000 admissions. Alesen(11) was able to find no case of mesenteric cyst recorded at the Los Angeles General Hospital between 1912 and 1929; but during the following five-year period one case was recorded in 188,921 admissions (Roller(5)). The average statistics, of which a long series has now accumulated, give the relative frequency of mesenteric cysts as approximating to one in every 100,000 admissions.

Review of available Australian literature covering the last twenty years has shown little reference to mesenteric cysts in Australia. Phillips(12) failed to find any case amongst 19,788 admissions to the Alfred Hospital, Melbourne, during the years from 1930 to 1933, or in 4,000 post-mortem examinations performed at that hospital since 1914. Three mesenteric cysts have been recorded in Australian medical journals during this time. In 1927 Lee(13) reported a mesenteric cyst simulating post-partum dilatation of the stomach; in 1928 Wade and Steigrad(14) recorded a case of lymphatic mesenteric cyst; and in 1935 Ross(15) described an enterogenous cyst in an infant.

Recently, at a Royal Australian Air Force hospital, a case of chylangioma, or cavernous lymphangioma containing chyle, was investigated by us and an exploratory operation was carried out. No other case of mesenteric cyst has been recorded in 13,744 admissions to this hospital. Because of the rarity of this type of mesenteric cyst, the case history will be briefly given and can be used as a basis for discussion of mesenteric cysts generally.

Report of a Case.

An airman of the Royal Australian Air Force, A.J.H., aged twenty years, first reported in June, 1944, that he had noticed an epigastric "lump", which was associated with some vague abdominal discomfort. The examining medical officer could feel a tumour mass in the epigastrium, which appeared to have a diameter of three inches. Further questioning elicited a history of three days' persistent umbilical pain, anorexia and nausea, but no vomiting. A curious feature was the complaint of persistent lumbar backache. Inquiry into the past history revealed no significant features. The patient was admitted to hospital at this time with a normal temperature and pulse rate, but with a "dirty" tongue and "heavy" breath. Abdominal examination revealed tenderness above and to the right of the umbilicus, with some abdominal rigidity. At this time the mass could not be palpated, although two days later a cystic, freely movable mass could be felt in the left lower quadrant of the abdomen. Shortly afterwards the tumour apparently disappeared, and repeated palpation gave negative results. An outstanding feature of the cyst has been its free mobility at all times, and a tendency to disappear, probably due to its being moved to a position under cover of the costal arch. The blood film was normal, and there was a slight decrease in the hæmoglobin value (93%). The Casoni test, the hydatid complement fixation test, the Wassermann test, a plain X-ray examination of the abdomen, and an opaque meal examination of the gastro-intestinal tract were all carried out with negative results.

In December, 1944, he was readmitted to hospital with some joint pains, which were considered to be of mild rheumatic nature. Once again the mass was palpable, but, being in the left loin, was considered probably renal in origin. Electrocardiograph tracings, a blood count, and estimation of the blood sedimentation rate gave normal results. X-ray films of the renal tract revealed an enlarged left renal shadow, which was, however, considered to be within normal limits, and no opaque calculi. Excretion pyelography revealed the dye excretion, the renal calyces, the pelvis and the ureter to be normal. After a month in hospital the patient was returned to duty, the mass being indefinitely palpable below the left costal margin and being considered possibly a kidney.

On June 1, 1945, the patient was readmitted to hospital with pain in the upper part of the abdomen and in the lumbar region, identical with that experienced a year previously. He was also aware of a freely mobile epigastric tumour. Clinical examination gave negative results, except for the presence of a smooth, freely movable, cystic mass about four inches in diameter, with regular outline, and situated in the umbilical region. While freely mobile, the mass could most easily be displaced into the right upper quadrant of the abdomen. The clinical diagnosis was between a mesenteric cyst and a hydatid cyst. The Casoni test was repeated with negative results. Microscopic examination of the urine revealed no siginificant features. A blood examination showed that the hæmoglobin value was 12·6 grammes per 100 mils (90%), the red blood cells numbered 4,670,000 per cubic millimetre, and the white blood cells numbered 8,700 per cubic millimetre, 66% being neutrophile polymorphonuclear cells, 23% being lymphocytes, 7% monocytes and 4% eosinophile polymorphonuclear cells.

Operation, performed on June 7, 1945, revealed a large, fleshy, irregularly rounded, well-differentiated tumour arising in the mesentery in the region of the duodeno-jejunal junction and the upper part of the jejunum, and extending towards its posterior attachment, thereby surrounding the superior mesenteric artery. The tumour was mottled, with pale pink and creamy-yellow areas throughout. The mesentery of the jejunum was widely separated by the tumour, which had extended in such a manner that it had formed a gutter that partly surrounded the jejunum over its proximal eight inches. There was no evidence that the tumour had infiltrated surrounding tissues, no obstruction to the lumen of the bowel was evident, although some thickening of the bowel wall over the first ten or twelve inches occurred, and a small number of the lacteals draining the area were thickened, dilated and filled with a material resembling clotted chyle or fat. The mass was of varying consistence, being formed of fleshy masses separated by cystic spaces, varying in size from the size of a pin's head to that of a golf ball; the whole area had a typical spongy appearance. The tumour, which was more extensive than clinical examination had led us to believe, was not invading surrounding structures, but its removal was considered to be technically impossible because of its relationship to the superior mesenteric artery, and marsupialization would not drain the cyst. Aspiration was carried out as a palliative procedure, no gastro-jejunal anastomosis being deemed necessary, as obstruction of the lumen of the jejunum appeared to be a most unlikely development for a considerable time. A biopsy specimen of the tumour mass was taken to confirm the diagnosis of chylous cyst of the mesentery. The abdomen was closed after operation.

The fluid obtained from the cystic spaces was milky, contained fat globules, and was partly pale pink from blood staining. The pathological report on the fluid was that the specimen of fluid was milky and blood-stained, and on microscopic examination was found to contain red blood cells, a few lymphocytes and granular material which resembled fat. The microscopic appearance of the biopsy specimen (see Figure I) revealed adipose tissue, in which some small blood vessels, irregularly shaped spaces and smooth muscle fibres were present. The spaces were lined by flattened endothelium and contained a small quantity of granular eosinophilic material and a few scattered red cells. The smooth muscle was irregularly arranged around these spaces, particularly the larger space visible in the section, and here the fibres tended to be grouped into interweaving fasciculi in the walls of the space. The pathologist's opinion

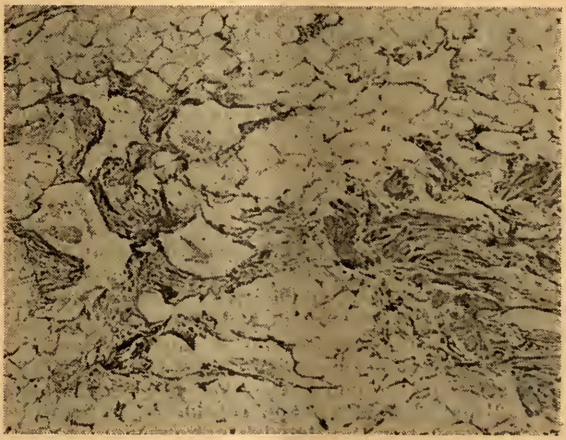


FIGURE I.

Photomicrograph of biopsy specimen of the chylangioma, showing a network of lymph spaces lined by flattened endothelium and surrounded by irregularly arranged, smooth muscle fasciculi. (Hæmotoxylin and eosin stain, × 105.)

was that these histological findings, taken in conjunction with the character of the aspirated fluid, indicated the diagnosis of chylangioma.

Convalescence was uneventful, and although a mass, smaller and less mobile than formerly, is still palpable in the lower part of the epigastrium, the patient is symptom-free and has returned to his pre-service occupation.

Discussion.

The classification of mesenteric cysts is confused, and no uniform opinion is noted amongst many schemes propounded. Moynihan in 1897 produced a simple classification, which was succeeded by the classification of Dowd,(16) who stressed the embryonic origin of many cysts. Subsequent classifications have been a modification or amplification of these earlier schemes.

Roller(5) gives the following scheme as a basis for classification of mesenteric cysts:

1. Embryocytomata or embryonic inclusion tumours.
    - (*a*) Urogenital remnants derived from sequestrated portions of Wolffian or Müllerian ducts.
    - (*b*) Cystic dermoids and teratomata resulting from sequestration of remnants of the developing genital glands.
    - (*c*) Dermoid inclusions (very rare).
    - (*d*) Enterocystomata arising from sequestration of either an intestinal diverticulum or the vitelline duct.
2. Chylous cysts, which are considered by Ewing to be chyle angiomata and by Dowd to be chylous secretion into preformed cysts.
3. Bacterial or parasitic cysts, such as occur as cystic formations in tuberculous glands or hydatid cysts.
4. Traumatic cysts, arising from hæmatomata in the mesentery or developing around a foreign body.
5. Angiomata of blood or lymph vessels. The latter would be lymphangiomata and should therefore be classified with the chylous cysts above.
6. Gas cysts, which are included with reservation.

In the classification which Petersen(17) proposes, the primary distinction is made between embryonic cysts and pseudo-cysts, which are grouped thus:

1. Embryonic.
    - (*a*) Cysts arising from embryonic remnants and sequestrated tissue: (i) serous, (ii) chylous, (iii) sanguineous, (iv) dermoid.
    - (*b*) Cysts of intestinal origin: (i) by sequestration from the bowel during development; (ii) arising from Meckel's diverticulum.
    - (*c*) Cysts arising from urogenital organs (germinal epithelium, ovary, Wolffian body or Müllerian duct).
2. Pseudo-cysts.
    - (*a*) Of infective origin.
    - (*b*) Cystic malignant disease.

However, for the purpose of study, and as a basis for discussion, the simple classification of Ewing(1) appears adequate. He concisely divides mesenteric cysts into four groups, as follows: (i) lymphatic or chylous, (ii) enteric, (iii) urogenital, (iv) dermoid and teratoid.

It will be noted that cysts of neighbouring organs, encysted hæmatomata, malignant cysts, infective cysts and hydatid cysts are excluded, and that gas cysts, which are rare, of disputed ætiology, and considered by many to be due to gas formation in dilated lymph or chylous channels, are not classified.

Dermoids and teratoid tumours are extremely rare in the mesentery, although they can occur at any point from the cœliac axis to the pelvis. Their origin is disputed, but two main views are held. Wilms considers that they arise from imperfect closure of embryonic abdominal plates, but others consider that they arise from an ovarian basis. In the mesentery these tumours differ in no way from similar dermoids and teratoids of other situations.

Cysts of urogenital origin are but rarely found amongst mesenteric cysts and form an ill-defined group. In a discussion on retroperitoneal cysts, Handfield-Jones(18) traces the origin of cysts in relation to the embryonic urogenital system. It is quite conceivable that mesenteric cysts could arise by displacement of remnants of the Wolffian system into the developing mesentery. Cysts of urogenital origin are usually large, thin-walled cysts, lined by low columnar epithelium and having a fibrous tissue wall. In the cyst is found a clear, serous fluid, of low specific gravity, and containing pseudo-mucin. Cysts of urogenital origin are difficult to distinguish from cysts of mesocolic origin, to which attention has been drawn by Handfield-Jones, who related their origin to islands of peritoneum which failed to disappear during the process of development and fixation of the colon.

Enteric cysts form a definite group of mesenteric cysts. Dowd(16) focused attention on the origin of mesenteric cysts from remnants of the Wolffian body, but also admitted that some cysts might arise from intestinal diverticula. Evidence is now conclusive that enterogenous cysts arise in this manner. Miller(19) reports a case in which an enteric cyst could be seen developing from the intestinal wall, and there is abundant evidence that intestinal diverticula may arise in the bowel of the embryo. If such a diverticulum, lying between the layers of the mesentery, becomes separated, it readily forms a potential mesenteric cyst. Such a cyst has usually a single cavity and a wall resembling that of the intestine; it even contains layers of smooth muscle, a mucosa with crypts, and a lining of cylindrical, cuboid or stratified epithelium. Evans(20) states that all cysts found in the abdomen, in the thorax or at the umbilicus, having the structure of gut, must have been derived from the primitive intestinal tract and are developmental enterogenous cysts. These cysts can arise from a diverticulum of embryonic entoderm in this manner, but another source is in relation to the vitello-intestinal tract. The situation of the vitello-intestinal tract in relation to the mesentery is subject to considerable variations, and it is not uncommon for remnants of the vitello-intestinal tract to become separated between the layers of the mesentery, and to give rise to typical enteric mesenteric cysts. It appears probable that cysts arising from vitelline duct remnants would be found towards the lower portion of the small intestine, while those arising from the formation of intestinal diverticula would appear at the upper end.

Chylous or lymphatic cysts have caused a large amount of discussion in medical literature. Many authors, including Dowd,(16) Warfield,(3) and Higgins and Lloyd,(2) regard chylous or lymphatic mesenteric cysts as not arising from obstruction of lymphatics, but as accumulations in pre-existing cysts. However, there seems to be considerable reliable evidence that lymphatic or chylous cysts exist as distinct entities and that they are mostly of embryonic origin, although some may be acquired. The former are the true chylangiomata and the latter are due to obstruction to lymphatic vessels. It is, however, not always easy to distinguish between the lymphangiomatous and the lymphangiectatic variety.

Chylous cysts form large, usually multilocular tumours, or sometimes occur as numerous small swellings of the mesentery, the intestine, the omentum or retroperitoneal organs. Chylangioma can be considered as a tumour of lymph vessels, consisting of endothelial cells and connective tissue, both of which take part in the neoplastic process. The condition is considered of embryonic origin, even though signs and symptoms may not be present until adolescence or adult life. The tumour consists of an anastomosing network of lymph spaces supported by thin walls or thick septa, lined by endothelium, with chylous contents or more inspissated fatty material, and often blood-stained. The endothelium lining the cavernous lymph spaces may be flattened, or in places it may be hyperplastic, proliferating and heaped up into layers. In some specimens evidence of the formation of new lymphatic channels can be observed as an outgrowth of endothelium into the connective tissue and its subsequent canalization. It is possible in cysts with tense contents for the endothelial lining to be distributed in a patchy fashion. The walls of the lymph spaces may be thin or thick septa; they are composed of fibrous tissue, in which may be found many small round cells, lymph follicles and dilated lymph spaces on many occasions. Some elastic tissue and bundles of smooth muscle may be present in the walls, and giant cells are found about fatty detritus. The presence of smooth muscle in the wall, being a feature common to chylangiomata and enteric cysts, may make their recognition difficult.

The contents of chylangiomatous cysts rarely appear to have been analysed or correlated with the contents of mesenteric cysts whose pathology is known. It appears as if all analyses have been made on "typical" mesenteric cysts of unstated ætiology, and no examination of fluid from a chylous lymphangioma (chylangioma) appears to have been made and compared with that of fluid from a lymphangioma containing clear fluid. Higgins and Lloyd(2) state that "typical" fluid from a mesenteric cyst is pale, clear, straw-coloured fluid with a specific gravity of 1015 to 1016, contains large amounts of albumin, and is alkaline in reaction; blood, cell debris and cholesterin are also usually present. Ross and Mead(21) analysed "chyle-like" and amber fluid from mesenteric cysts, but stated that the sample was not chyle, which consists of lymph containing fat globules, but that it consisted of fluid, the milky appearance of which was due to protein loosely bound with lipoid material, particularly lecithin. The composition of the two samples varied little, except in respect to fat and cholesterol; both contained 94·3% water, 5·7% solids and approximately 3·8% total protein. The fat (ether-soluble) content in the chylous fluid was 0·27% as compared with 0·73% in the amber fluid, and the cholesterol content was 0·178% in the chylous fluid as against 0·38% in the amber fluid. Messer(22) analysed the fluid from a chylous cyst in a patient operated upon by Slocum,(7) comparing its composition with that of chyle, chylous effusion and the contents of chylous cysts reported by other authors. Once again considerable disparity exists in the chemical composition, and no constant feature appears in the analyses of the four authors quoted. The fat content varied from 4·5% to 35·8%, and the protein content from 1·97% to 8·51% in the analysis of the mesenteric cystic fluid. In this series it is again uncertain whether the contents of the chylous cysts should be considered as those of chylangiomata. Messer believed the disparity to be due to variation of the degree of effusion or to differential absorption of the stagnant fluid. The particular specimen examined was a creamy fluid, which on standing separated out, a tenacious creamy sludge being produced. One pronounced feature of chylous fluid that should be noted is its resistance to accidental contamination by bacteria; a specimen remains sterile for long periods in the absence of precautions to avoid entry of bacteria. This is rather surprising, in view of the relatively high protein content; it suggests that the fluid has a bacteriostatic effect.

Macroscopically, chylangiomata are well differentiated from surrounding tissues, having a capsule which varies with the size of the cysts, with their situation, and according to whether they are pedunculated or sessile, or whether they project between the layers of the mesentery. The tumour may be a single cyst or a multilocular cyst with cystic spaces of varying size; it may be entirely cystic or partly fleshy.

Chylangiomata are considered benign tumours, whose embryonic origin is stressed by Klemm and Rittner (as quoted by Ewing(1)) and by Murbach, Lewison and Diebert,(23) who pointed out that lymphangiomata occurred most frequently at the primitive centres of origin of lymph tissue in the embryo.

Acquired dilatation of lymphatic vessels of the intestinal tract can give rise to mesenteric cysts, and such dilatations are included in the definition of chylangiomata outlined at the commencement of this paper. That obstruction of lymphatics can give rise to cysts has been challenged on the grounds that the rich anastomosis of lymphatics would not permit this occurrence. However, there are some grounds for the belief that it is possible, and there is no doubt that lymph stasis influences the course of many congenital lymphangiomata and that cystic dilatation does occur in the newly formed lymph vessels of proliferating cystic lymphangiomata. In some cases the dilatation with cyst formation appears to involve chiefly the lymph nodes. Such a condition would be comparable with the condition described by Hill,(24) to which he has given the name of mesenteric chyladenectasis. He noted that, while excessive dilatation of lymph-node sinuses to form multilocular or single cysts was rare, dilatation of mesenteric gland nodes with inspissated chyle was extremely rare. This dilatation, to which the term "chyladenectasis" has been given, has been variously attributed to obstruction of the lymphatics or the lymphatic duct, to infarction of efferent lymph vessels, to obstruction of the thoracic duct and iliac veins simultaneously, to chronic desquamative lymphangitis, and to inflammatory change altering the local lymphatic circulation. Cystic changes are present in the lymph nodes, which have the character of lymph-gland medullary sinuses, with no true endothelial lining, and absence of smooth muscle around the cystic channels. Hill states that chyladenectasis should be considered in cases of multilocular, multiple cysts located in the mesentery, particularly in adults, and not involving the intestinal wall. The characters of these cysts are the presence of chylous or fatty material in dilated lymph-node sinuses without complete endothelial lining, absence of smooth muscle in the cyst walls, and suitable obstruction to chylous drainage.

The differentiation of mesenteric cysts into their various groups is not easy on either anatomical or pathological grounds; but it may be stated that the presence of smooth muscle, epithelial lining of intestinal type and perhaps goblet-cell formation suggests enteric cysts; endothelial lining suggests chylangioma; high columnar epithelium and pseudo-mucin, hair or teeth, suggest origin from primitive sex organ ancestry (Warfield(3)).

Mesenteric cysts occur at any age, but the maximum incidence appears to be in early adult life. There is general agreement on this, although Higgins and Lloyd(2) state that the maximum incidence is between the ages of ten and twenty years, while Warfield(3) found the greatest incidence in the fourth decade, and Collins and Berdez(6) found it in the third decade. The female sex seems to be more commonly affected than the male.

Warfield(3) has stated the distribution of mesenteric cysts reported in the literature in their relation to the intestine; but, unfortunately, no statistics appear to be available as to the location of various pathological types of cysts in relation to the bowel. It was found that cysts of the small intestinal mesentery were slightly more frequent than those of the large bowel; that 1·5% occurred at the duodeno-jejunal junction; that cysts of the ileum were almost three times as common as cysts in the jejunum; and that the three divisions of the colon had approximately an equal number of cysts in relation to them.

The symptoms arising from mesenteric cysts are in no way pathognomonic; it is often the onset of an acute surgical complication that first draws attention to the condition. In uncomplicated cases the patient presents for examination with the complaint of a palpable tumour or of abdominal distension. The tumour varies in size, but characteristically it is smooth, rounded or lobulated, somewhat centrally situated in the abdomen; perhaps its most prominent feature is its extreme mobility, especially in a transverse direction. In favourable circumstances the fluctuant or fluid nature of the cyst contents can be demonstrated. The second important feature which draws the patient's attention to his condition is pain; this is nearly always present, even in the absence of complications which almost invariably are accompanied by severe pain. The pain may be generalized over the abdomen or may be confined to the tumour itself. In the latter case particularly, localized tenderness may be elicited. It is stated that pain is more frequently present in mesenteric cysts than in any other cystic abdominal tumour. The reason for this is not apparent, although the curious lumbar pain in the case quoted was probably due to drag or tension on the mesentery. The site, nature and cause of pain in uncomplicated mesenteric cysts do not appear to have received much attention in the literature.

Other symptoms, such as malaise, anorexia, nausea or occasional vomiting are not prominent features, but are more common in mesenteric cysts than in those of retroperitoneal regions. Fatigue and loss of weight and strength may occur, but these are only of minor grade; the rapid loss of weight, which Moynihan thought was a feature of chylous cysts, does not appear to be a constant finding.

The classical clinical signs were considered to be the prominence of a fluctuant tumour towards the umbilical region, great mobility in a transverse direction, and the presence of a "zone of resonance around and a belt of resonance across the cyst". The last-mentioned sign must be most inconstant, apparently has no sound logical basis, and is rarely mentioned by modern writers. The features of the palpable tumour have already been mentioned, except that the percussion note over the tumour may be dull, and variable bands of resonance as described above not be present. Tenderness over the cyst is frequently found even in the absence of complications.

The usual history, physical signs and symptoms presented in a case of mesenteric cyst are those of complications which may arise and will be discussed no further.

In a review of cysts of the omentum, of the mesentery, and of retroperitoneal origin, Berger and Rothenberg,(25) reviewing eighteen cases, of which five were cases of mesenteric cyst, found that eight patients had sought treatment for acute surgical conditions, that eight patients complained of a mass only, and that two-thirds of the patients had had pain; four of the five patients with mesenteric cysts had complained of pain and had a palpable tumour also.

The diagnosis of mesenteric cyst is primarily one of correlating the physical signs of a freely mobile cyst in the abdomen with the knowledge that, although they are rare, mesenteric cysts occur and must be considered in a differential diagnosis. Their final diagnosis is made by elimination of other conditions.

In the matter of diagnosis, the intelligent use of X-ray facilities greatly helps in arriving at a correct opinion. Hinkel(26) states that valuable information concerning location of a cyst can be obtained by palpation under an X-ray screen after the administration of barium orally or rectally, or in both ways, noting indentation of viscera, their mobility and other features. A plain X-ray film of the abdomen occasionally outlines the shadow of a mesenteric cyst, particularly if calcification is occurring in its wall. Excretion pyelography establishes the relation of a cyst to the renal tract and is helpful in differential diagnosis. It has been suggested that pneumoperitoneum methods may help in the localization and identification of a mesenteric cyst.

The differential diagnosis of mesenteric cysts is from ovarian cysts, retroperitoneal tumours, pancreatic cysts, hydronephrosis, hydatid cysts, bowel tumours, pregnant uterus *et cetera*.

Complications which may occur in mesenteric cysts are numerous and give rise to serious conditions whose signs and symptoms overshadow those of the original cyst and for which treatment of a surgical nature is urgently required. Briefly, the complications may be stated as follows.

1. Intestinal obstruction, which occurs in 30% to 50% of cases and has a high mortality rate. The mechanism of the obstruction is variable, symptoms arising from volvulus, angulation of the bowel, adhesions, intussusception, or stenosis of the bowel by pressure from the cyst.

2. Peritonitis, which may develop as a complication of intestinal obstruction or of rupture of the cyst.

3. Hæmorrhage into a mesenteric cyst, which may have acute symptoms and prove fatal. It is also common for a minor grade of hæmorrhage to occur into a cyst, particularly of the chylangiomatous type, giving rise to the pink colour of the contents, but to no other symptoms.

4. Rupture of the cyst, either spontaneously or, more frequently, as a result of trauma of minor or gross degree.

5. Torsion, which may occur, but is infrequent.

6. Incarceration of a cyst in the pelvis; this has been mentioned, but must be a rare complication.

The question of malignant changes occurring in mesenteric cysts is an important one, but malignancy appears to be exceedingly rare. It may, therefore, be considered that mesenteric cysts are benign tumours, and the prognosis will depend upon the size, the location and the site of attachment of the cyst, upon the presence of complications, such as intestinal obstruction and peritonitis, with their high mortality, and, finally, upon the type of operative procedure necessary for the treatment of the condition. The malignant changes that have been described are of a sarcomatous or carcinomatous nature, but very few cases indeed have been reported.

The treatment of mesenteric cysts, without complications, has become standardized and can be considered in four sections, as follows.

1. Enucleation of the cyst is without doubt the ideal procedure. It is most frequently employed and is accompanied by the lowest mortality rate of any curative procedure. Dense adhesions render the operation difficult, and at all times care must be taken to avoid injury to the vascular channels to the bowel.

2. In many instances it is found that enucleation is impossible because of adhesions to the bowel wall, the situation of the tumour, or liability of a loop of bowel to gangrene from damage to vessels in the mesentery. In such cases resection of the tumour and a portion of the bowel is the method of treatment. The mortality rate of this procedure is greater than that of the enucleation operation and is higher still in the presence of complications.

3. In certain circumstances it is impossible to perform either of these operations, and so opening, drainage and marsupialization of the cyst to the abdominal wall are the only feasible procedures. Despite many objections to this method, it has a place in the treatment of mesenteric cysts, it is fairly safe and, given sufficient time, it results in the obliteration of the cyst with final cure. The objections on the grounds of persistent sinus formation, non-obliteration of the cavity and the greater incidence of intestinal obstruction, are more theoretical than real.

4. Aspiration alone is not a satisfactory method of treatment, but it may be used as a preliminary stage in radical surgical treatment. It was used in the case quoted in this paper, with the full realization of the limitations of the method, because radical excision or marsupialization was impossible, and in the absence of obstruction, anastomosis of the bowel was not indicated.

It will be noted that all procedures for relief of the condition are based upon recognition of the benign nature of the usual mesenteric cyst and must be modified in the case of the uncommon malignant cyst.

Cysts complicated by intestinal obstruction, peritonitis, rupture, or the other rarer conditions, primarily demand the standard treatment for these disorders, the decision in respect to the cyst and the line of treatment to be adopted being made at the time of operation. The mortality rate is higher by virtue of the complications, but apart from this fact the treatment is along routine lines and needs no further comment.

Summary.

1. A case of chylangioma of the mesentery at the duodeno-jejunal junction is reported. The cyst had the features of a true tumour of the lacteals, and is sufficiently uncommon to be of interest, especially in view of the infrequency in the literature of reports of mesenteric cysts of any type.

2. The confused classification of mesenteric cysts is discussed, and an attempt has been made briefly to describe common types of mesenteric cysts.

3. The clinical signs, symptoms, diagnosis and treatment of mesenteric cysts are briefly stated.

4. Mesenteric cysts must be more common than appears from perusal of the literature, which, from lack of material, presents an inadequate basis for investigation of the subject. A plea is therefore made for further case reports, so that data can be collected for elucidation of the problem of the nature, frequency and origin of cysts in relation to the peritoneum and mesentery.

100 ccm
Trade 'Avertin' Mark
fluid
Brand of Bromethol
BAYER PHARMA PTY LTD
YOUNG STREET
Sydney N S W
25 ccm
Trade 'Avertin' Mark
fluid
Brand of Bromethol
BAYER PHARMA PTY LTD
Young Street
Sydney N S W

'AVERTIN'

BRAND OF BROMETHOL

THE BASAL ANAESTHETIC FOR RECTAL ADMINISTRATION

'Avertin' basal anæsthesia, with the addition of a small quantity of ether or gas and oxygen, means:

FOR THE SURGEON: perfect anæsthesia and relaxation.

FOR THE ANÆSTHETIST: ease in carrying out the induction and maintenance of anæsthesia.

FOR THE PATIENT: a quiet sleep in bed before the operation and a peaceful recovery.

IN BOTTLES OF 25 AND 100 C.C.

BAYER PHARMA PTY. LTD.

SYDNEY.

BAYER

DISTRIBUTORS: FASSETT & JOHNSON LTD., CHALMERS STREET, SYDNEY

Akta-Vite

Nutritive Food Tonic

Each 10 grammes (approximately 2 teaspoonfuls) contains not less than:

Vitamin A	2,000 Int. Units
Vitamin B_1	300 Int. Units
Vitamin C	300 Int. Units
Vitamin D	1,000 Int. Units

Together with dextrose and calcium phosphate in a chocolate base.

- For the treatment of those vague conditions of sub-normal health—nervous exhaustion, sleeplessness, anorexia, gastro-intestinal atony with chronic constipation.
- In debility following severe illness, and for those cases where treatment necessitates restriction of the normal diet.
- During pregnancy and childhood.
- As a stimulant for sub-normal lactation.

In 5 and 10 oz. jars and 40 oz. tins.

10 OZS
AKTA·VITE
NUTRITIVE FOOD TONIC
CONTAINING 4 IMPORTANT VITAMINS
A B C D
Nicholas Product

A NICHOLAS ETHICAL PRODUCT

Acknowledgements.

We are indebted to Air Vice-Marshal T. E. V. Hurley, Director-General of Medical Services, Royal Australian Air Force, for permission to publish this article. We also wish to thank Professor S. Sunderland, Professor of Anatomy, University of Melbourne, for the photomicrograph of the specimen, and Major F. R. Magarey for the pathological reports.

References.

(1) J. Ewing: "Neoplastic Diseases", Fourth Edition, 1942.

(2) T. T. Higgins and E. I. Lloyd: "Mesenteric Cysts: With a Report of Two Cases", *The British Journal of Surgery,* Volume XII, July, 1924, page 95.

(3) J. O. Warfield: "A Study of Mesenteric Cysts", *Annals of Surgery,* Volume XCVI, September, 1932, page 329.

(4) W. B. Swartley: "Mesenteric Cysts", *Annals of Surgery,* Volume LXXXV, June, 1927, page 886.

(5) C. S. Roller: "Mesenteric Cysts", *Surgery, Gynecology and Obstetrics,* Volume LX, June, 1935, page 1128.

(6) C. W. Flynn: "Mesenteric Cysts, with Report of a Case of Cystic Lymphangioma", *Annals of Surgery,* Volume XCI, April, 1930, page 505.

(7) M. A. Slocum: "Surgical Treatment of Chylous Mesenteric Cyst by Marsupialization", *The American Journal of Surgery,* Volume XLI, September, 1938, page 464.

(8) E. O. Parsons: "True Proliferating Cystic Lymphangioma of the Mesentery", *Annals of Surgery,* Volume CIII, April, 1936, page 595.

(9) A. N. Collins and G. L. Berdez: "Chyle Cysts of the Mesentery", *Archives of Surgery,* Volume XXVIII, February, 1934, page 335.

(10) E. S. Judd and N. W. Crisp: "Primary Tumours of the Mesentery", *Proceedings of the Staff Meetings of the Mayo Clinic,* Volume VII, September 21, 1932, page 555.

(11) L. A. Alesen: "Mesenteric Chylous Cysts", *California and Western Medicine,* Volume XXX, April, 1929, page 261.

(12) H. A. Phillips: "Spindle-Celled Mesenteric Tumours; with Remarks on Similar Retro-Peritoneal Tumours", *The British Journal of Surgery,* Volume XXI, April, 1934, page 637.

(13) A. E. Lee: "Mesenteric Cyst Simulating Acute Post-Partum Dilatation of the Stomach", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, January 15, 1927, page 83.

(14) R. B. Wade and J. Steigrad: "A Case of Mesenteric Cyst", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, April 14, 1928, page 465.

(15) K. Ross: "Enterogenous Cyst in an Infant", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, July 13, 1935, page 53.

(16) C. N. Dowd: "Mesenteric Cysts", *Annals of Surgery,* Volume XXXII, October, 1900, page 515.

(17) E. W. Petersen: "Cysts of the Mesentery", *Annals of Surgery,* Volume CXII, July, 1940, page 80.

(18) R. M. Handfield-Jones: "Retro-Peritoneal Cysts: Their Pathology, Diagnosis and Treatment", *The British Journal of Surgery,* Volume XII, July, 1924, page 119.

(19) R. T. Miller: "Enterogenous Mesenteric Cysts", *The Bulletin of the Johns Hopkins Hospital,* Volume XXIV, October, 1913, page 316.

(20) A. Evans: "Developmental Enterogenous Cysts and Diverticula", *The British Journal of Surgery,* Volume XVII, July, 1929, page 34.

(21) D. Ross and C. I. Mead: "Mesenteric Cysts: With Report of a Case", *The Canadian Medical Association Journal,* Volume XXX, March, 1934, page 262.

(22) F. C. Messer: "Analysis of Fluid from a Chylous Mesenteric Cyst", *The Journal of Laboratory and Clinical Medicine,* Volume XXIII, March, 1938, page 596.

(23) C. F. Murbach, E. F. Lewison and G. A. Diebert: "Lymphangioma of the Abdomen", *The American Journal of Surgery,* Volume LXVIII, June, 1945, page 391.

(24) J. M. Hill: "Mesenteric Chyladenectasis", *The American Journal of Pathology,* Volume XIII, March, 1937, page 267.

(25) L. Berger and R. E. Rothenberg: "Cysts of the Omentum, Mesentery and Retro-Peritoneum", *Surgery,* Volume V, April, 1939, page 522.

(26) C. L. Hinkel: "Mesenteric Cysts: Their Roentgen Diagnosis", *The American Journal of Roentgenology,* Volume XLVIII, August, 1942, page 167.

THE TREATMENT OF HÆMOPHILUS INFLUENZÆ MENINGITIS WITH SULPHONAMIDES IN CONJUNCTION WITH HÆMOPHILUS INFLUENZÆ, TYPE B, RABBIT ANTISERUM.

By E. A. North, Harold Wilson and G. Anderson.

From the Commonwealth Serum Laboratories, Melbourne.

Of the several forms of infectious meningitis in children, that caused by *Hæmophilus influenzæ* is common and deadly. In spite of the various papers which have appeared on this disease, its importance does not seem to be widely perceived, and so it may be desirable to mention some points about it before discussing its treatment with sulphonamides in conjunction with *Hæmophilus influenzæ* rabbit antiserum, which is the subject of this report.

Frequency.

The frequency of *Hæmophilus influenzæ* meningitis among other kinds of infectious meningitis in children at home and abroad may be gathered from Table I. It is indistinguishable clinically from other kinds of infectious meningitis. The diagnosis is reached as a result of bacteriological examination of the cerebro-spinal fluid, and there is reason to think that *Hæmophilus influenzæ* when present is not always identified. The disease may therefore be commoner than is believed. Suggestions will be made under the heading "Bacteriological Diagnosis" below, which should help to obviate this error.

Age Incidence.

Hæmophilus influenzæ meningitis is about three times more frequent in children aged under two years than in older children (Fothergill and Wright, 1933; Wilkes-Weiss and Huntington, 1936). Of the 388 children who are included in the present report, 68% were aged under two years; the number within each year of age is shown in the bottom line of Table II. The disease is rare in adults.

Mortality.

Alexander's (1943) estimate that, before the introduction of specific treatment, 92% to 100% of affected children died is supported by Neal *et alii* (1934), who reported that four children (3·5%) had recovered out of 111 (all children died out of 62 who were aged less than two years). Alexander's estimate is also supported by Wilkes-Weiss and Huntington (1936), who found among 500 reported cases only nine recoveries out of 373 children aged under two years (2·4% recovered), and 26 recoveries out of 127 aged over two years (20·5% recovered), and by Silverthorne (1943), who reported one recovery among 70 cases. Knouf *et alii* (1942), Neter (1942), and Johnson and Fousek (1943) have reported that all the children in their smaller series (19, 37 and 22 children respectively) died under non-specific treatment. Alēman (1940) found that 15 children (3·2%) recovered out of 478, aged under two years, whose cases were on record on were in her own experience. In the present series two children (1·2%) recovered out of 157 of all ages who received no specific treatment (Table II); they were aged respectively between two and three years and over four years. Children aged twenty-five months or over numbered 50; of these, therefore, 4·0% recovered.

In the case of children aged less than two years, death is so common under expectant treatment that recovery of even a few such children after other treatment may reasonably be attributed to it.

Specific Treatment.

Pittman's (1930, 1931) differentiation of *Hæmophilus influenzæ* into six serological types, *a* to *f*, and her discovery that one type, type *b*, is responsible for practically all cases of meningitis, led to the preparation of type-specific *Hæmophilus influenzæ* horse antiserum. Unfortunately, the clinical results of its use either alone or together with complement (Ward and Wright, 1932; Wright and Ward, 1932; Ward and Fothergill, 1932; Fothergill and Blackfan, 1935) or sulphonamides were disappointing (Pittman, 1933, 1/18;[1] Wilkes-Weiss and Huntington, 1936, 1/19; Fothergill, 1937, 31/201; Lindsay *et alii*, 1940, 9/37; Knouf *et alii*, 1942, 1/32; Silverthorne, 1943, 8/36).

Meanwhile, sulphonamides were found to inhibit the growth of *Hæmophilus influenzæ in vitro* and *in vivo* (Pittman, 1939, 1942; Alexander, 1943). Clinical reports

---

[1] In fractions following authors' names, the denominator indicates the number of children treated, the numerator the number that recovered.

TABLE I.

Relative Frequencies of the Various Kinds of Infectious Meningitis in Children.

Source.	Number of Cases in which Organism was Isolated.							
	Tubercle Bacillus.	Meningo-coccus.	*Hæmophilus influenzæ.*	Pneumo-coccus.	Strepto-coccus.	Staphylo-coccus.	Others.	Total.
Children's Hospital, Boston, 1920–1931; Fothergill and Sweet (1932)	290	160	78	69	69	—	39	705
Children's Hospital, Boston, 1933–1936; Fothergill (1937)	31	27	51	38	36	—	38	221
Children's Hospital, Washington, D.C. Lindsay, Rice and Selinger (1940) ..	205	180	100	73	50	5	29	642
Bureau of Laboratories, Department of Health, New York. Neal, Jackson and Applebaum (1934)	961	1,216	111	209	203	27	—	2,727
Hospital for Sick Children, Toronto. Silverthorne (1943)	368	236	153	148	170	25	—	1,100
Royal Alexandra Hospital for Children, Sydney,[1] 1934–1944	120	291	118	86	38	13	78	744

[1] By courtesy of the Medical Superintendent.

TABLE II.

The Numbers of Children According to Age who Received no Specific Treatment (up to 1937), or who were Treated with Sulphonamides (from 1937 Onwards), or with Sulphonamides in Conjunction with Hæmophilus Influenzæ, Type B, Rabbit Antiserum (from 1943 Onwards), and the Numbers who Recovered.

Form of Treatment.	Age in Months.										All Ages.		
	0 to 12		13 to 24		25 to 36		37 to 48		49 and Over.				
	Patients.	Recoveries.	Patients.	Recoveries.	Patients.	Recoveries.	Patients.	Recoveries.	Patients.	Recoveries.	Total Children Treated.	Number of Recoveries.	Percentage.
No specific treatment:													
Royal Alexandra Hospital for Children, Sydney[1] ..	26	0	30	0	11	0	8	0	9	1	84	1	
Children's Hospital, Melbourne[1]	30	0	22	0	11	1	4	0	6	0	73	1	
Total	56	0	52	0	22	1	12	0	15	1	157	2	1·2
Sulphonamides:													
Royal Alexandra Hospital for Children, Sydney ..	27	3	22	5	14	6	8	4	15	8	86	26	
Children's Hospital, Melbourne	24	1	24	4	7	0	6	1	3	1	64	7	
Total	51	4	46	9	21	6	14	5	18	9	150	33	22·0
Sulphonamides and serum:													
Royal Alexandra Hospital for Children, Sydney ..	4	0	1	0	2	1	1	1	2	2	10	4	
Children's Hospital, Melbourne	14	3	16	10	10	8	4	4	0	0	44	25	
Other Australian Hospitals	19	10	4	3	1	1	1	1	2	2	27	17	
Total	37	13	21	13	13	10	6	6	4	4	81	46	56·8
Total	144		119		56		32		37		388		

[1] From figures supplied by courtesy of the medical superintendents.

of its use covered 59 children, of whom 23 (38·9%) recovered (Hamilton and Neff, 1939, 1/1; Sirlin and London, 1940, 1/1; Jacoby, 1941, 1/1; Neter, 1942, 1/3; Knouf *et alii*, 1942, 1/13; Sako *et alii*, 1942, 5/7; Davies, 1943, 4/20; Moir, 1943, 2/4; Hall and Spink, 1943, 2/2; Silverthorne, 1943, 3/5; Cooperstock, 1944, 2/2). Unfortunately, with the exception of Davies's, these reports referred only to single children or to small series of children whose ages were not always given. In a disease in which death under expectant treatment is usual, reports of a new treatment, when based upon small numbers, tend to comprise an unduly high proportion of recoveries; success is more apt to be recorded than failure. Nevertheless, children evidently were saved by sulphonamides, though a recovery rate so high as 38·9% should hardly be expected in statistically adequate series comprising a due proportion of younger in relation to older children. Alexander *et alii* (1942) found that only 12% recovered of 50 children recorded in the literature and from their own experience. Aléman (1940) has reviewed the earlier reports and found 10 patients (12·2%) recovered out of 82 treated with sulphanilamide and five recovered out of 18 treated with sulphapyridine.

Finally, *Hæmophilus influenzæ* rabbit antiserum was introduced by Alexander (1939). In contrast to *Hæmophilus influenzæ* horse antiserum, its efficacy in conjunction with sulphonamides was reported consistently (Neter, 1942, 4/7; Scott and Bruce, 1942, 1/1; Scully and Menten, 1942, 5/9; Grunthal and Winters, 1943, 2/2; Johnson and Fousek, 1943, 17/20; Alexander, 1943, 57/75; Hall and Spink, 1943, 2/2; Silverthorne, 1943, 3/10; Birdsong *et alii*, 1944, 7/8; Boisvert *et alii*, 1944, 22/26; Nicholson, 1944, 2/4; Turner, 1945, 10/20). One hundred and thirty-two children (71·7%) recovered out of the 184 comprised in these reports, most of which are open to the criticisms raised against similar meagre reports of the use of sulphonamides. They include, however, four less inadequate series of 20 or more children, of whom 106 (75·2%) recovered out of 141. Evidently further reduction in the mortality rate followed the addition of *Hæmophilus influenzæ* rabbit antiserum to sulphonamides.

Penicillin is not efficacious in *Hæmophilus influenzæ* infections.

The Present Series.

The data relating to children in the present series who received no specific treatment or who were treated with sulphonamides were provided from the records of the Children's Hospital, Melbourne, and of the Royal Alexandra Hospital for Children, Sydney, by courtesy of the respective medical superintendents. For generous cooperation in supplying all information required for this report we are grateful to them, and also to some fourteen physicians, in the course of whose hospital or private practice in various places children were treated by sulphonamides in conjunction with *Hæmophilus influenzæ*, type *b*, rabbit antiserum.

The serum was prepared in rabbits at the Commonwealth Serum Laboratories against strains of *Hæmophilus influenzæ*, type *b*, isolated from cerebro-spinal fluid. It was treated to reduce its toxicity to human beings (Goodner *et alii*, 1937), but it was not concentrated; it was estimated to contain not less than one milligramme of antibody nitrogen per mil (Alexander and Heidelberger, 1940) on the basis of its precipitin titre and by mouse protection tests (Seidman *et alii*, 1942). It was issued to any physician who required it, who used it at his discretion; it was thus submitted to a field trial in unselected patients under ordinary conditions.

In Table II are shown respectively the numbers of children according to age who received no specific treatment (up to 1937) or who were treated with sulphonamides (from 1937 onwards) or with sulphonamides in conjunction with *Hæmophilus influenzæ*, type *b*, rabbit antiserum (from 1943 onwards), and the numbers who recovered. The independent results from the two widely separated hospitals are shown separately. All children are shown in the table, including some who were moribund or were already suffering from hydrocephalus when treatment was begun; no one is omitted; the table therefore includes the four children previously reported from the Children's Hospital, Melbourne, by Nicholson (1944), and the 29 reported by Turner (1945).

Of 157 children who received no specific treatment, two (1·2%) recovered. On the other hand, of 150 who were treated with sulphonamides, 33 (22%) recovered, and of 81 who were treated with sulphonamides in conjunction with *Hæmophilus influenzæ*, type *b*, rabbit antiserum, 46 (56·8%) recovered. The improvement under treatment with sulphonamides, and the further improvement under treatment with sulphonamides in conjunction with rabbit serum is obviously highly significant ($P = 0\cdot0000002$).

Discussion.

Influence of Age on Prognosis.

The influence of age on prognosis in children who received no specific treatment has been referred to under the heading "Mortality" above. Under treatment with sulphonamides and under treatment with sulphonamides in conjunction with rabbit serum the recovery rate improved with each year of age (Table II). The influence of age on prognosis is more clearly shown in Table III, in which the results of treatment with sulphonamides or with sulphonamides in conjunction with rabbit serum are arranged within the age groups from birth to twenty-four months and twenty-five months or over. Under each plan of treatment the recovery rate is higher in the higher age group.

As is shown in the last column of Table III, there is a highly significant difference in the survival rate among children treated with sulphonamides and serum as compared with those treated with sulphonamides alone. The significance in the under twenty-four months age group is greater than in the higher age group, but this is because the former group is the larger.

If one assumes that the data presented represent a fair valuation of the efficacy of the two methods of treatment, the addition of serum is capable of saving the lives of about 30 out of 100 children whose ages vary from birth to twenty-four months, of almost 50 out of 100 children aged twenty-five months or over, and of 35 out of 100 children in both groups combined, all of whom would die if treated with sulphonamides alone.

A difference is noticeable in the results obtained in the two hospitals in children aged twenty-five months or more who were treated with sulphonamides. This is the only difference of any significance (P lies between 0·02 and 0·05) noticeable in the results obtained in the two hospitals; in all other groups their results were similar. It seems to provide a further example of the better prognosis in older as compared with younger children, since it is probably to be explained, at least in part, by the preponderance in the Sydney group as compared with the Melbourne group of children who were aged forty-nine months or over (Table II)—15 out of 37 in Sydney as compared with three out of 16 in Melbourne.

Principles and Practice of Treatment.

The disease, though usually fatal, varies much in intensity. It may progress slowly for weeks or appear so suddenly (Hertzog *et alii*, 1944) as to give little opportunity for treatment.

Experimental and clinical evidence suggests that, though sulphonamides inhibit *Hæmophilus influenzæ*, recovery

TABLE III.

The Numbers of Children who were Treated with Sulphonamides or with Sulphonamides in Conjunction with Hæmophilus influenzæ, Type B, Rabbit Antiserum, and the Numbers who Recovered within the Age-Groups 0 to 24 Months and 25 Months and Over.

Age in Months.	Sulphonamides.							Sulphonamides and Serum.									Probability Factor (P).[1]
	Royal Alexandra Hospital for Children, Sydney.		Children's Hospital, Melbourne.		Total Number of Patients Treated.	Total Number of Recoveries.		Royal Alexandra Hospital for Children, Sydney.		Children's Hospital, Melbourne.		Other Australian Hospitals.		Total Number of Patients Treated.	Total Number of Recoveries.		
	Patients.	Recoveries.	Patients.	Recoveries.		Number.	Percentage.	Patients.	Recoveries.	Patients.	Recoveries.	Patients.	Recoveries.		Number.	Percentage.	
0 to 24 ..	49	8	48	5	97	13	13·4	5	0	30	13	23	13	58	26	44·8	0·00002
25 and over	37	18	16	2	53	20	37·7	5	4	14	12	4	4	23	20	86·9	0·00007
Total ..	86	26	64	7	150	33	22·0	10	4	44	25	27	17	81	46	56·8	0·0000002

[1] When $P = 0\cdot01$, the odds are one in 100 that the difference in results (whatever that may be) is due to chance. Values of 0·05 or less are here regarded as statistically significant, and values of 0·005 or less as highly significant.

depends essentially upon immunity, that is, domination of antibody over antigen. The antibody is either produced naturally or injected therapeutically. The principle of treatment, therefore, as recognized by Alexander and her associates (1942, 1943) is to inhibit invasion by means of one of the sulphonamides until a bacteriological diagnosis has been reached and specific antibody can be injected sufficient to reinforce whatever natural antibody may be produced.

For a discussion of the principles and practice of modern treatment, the reader is referred to the papers just mentioned, on which many of the following remarks are based. Alexander attributes any improvement in her results which may have occurred since the experimental year 1938-1939 chiefly to careful control of the concentration of sulphonamide and antibody in the patient's blood.

The dose of serum, which is expressed in milligrammes of antibody nitrogen, should correspond to the severity of the infection as judged by the glucose content of the cerebro-spinal fluid or by the concentration of specific polysaccharide (antigen) in the body fluids. Alexander gives a good rough-and-ready method of estimating the glucose content of the cerebro-spinal fluid for this purpose: to one mil of Benedict's solution in each of five test tubes are added the quantities of cerebro-spinal fluid shown in Table IV, the concentration of glucose in the cerebro-spinal fluid being estimated according to the volume of fluid required to reduce the Benedict's solution.

Table IV.

A Qualitative Test for Estimating the Amount of Sugar in Cerebro-Spinal Fluid in Milligrammes per Centum. (*Alexander et alii*, 1942: *Alexander*, 1943.)

Tube Number.	Mil of Cerebro-Spinal Fluid.	Reduction of Benedict's Solution (1·0 Mil).					
I	0·05	+[1]	0[1]	0	0	0	0
II	0·1	+	+	0	0	0	0
III	0·15	+	+	+	0	0	0
IV	0·2	+	+	+	+	0	0
V	0·25	+	+	+	+	+	0
Milligrammes *per centum* of sugar		Over 50	40 to 50	30 to 40	20 to 30	10 to 20	10

[1] "+" = Reduction of Benedict's solution; "0" = no reduction of Benedict's solution.

The concentration of specific polysaccharide (precipitinogen) is estimated by observing the time taken for the precipitate to appear when cerebro-spinal fluid, clarified if necessary by centrifugation, is carefully layered over *Hæmophilus influenzæ* antiserum in a test tube of small (three to five millimetre) calibre; its appearance within ten minutes is held by Alexander to indicate severe infection requiring a correspondingly large dose of serum. Alexander's schedule of doses in relation to the glucose content of the cerebro-spinal fluid is as follows:

Spinal-Fluid Sugar, Mg. per 100 c.c.	*Antibody Nitrogen Indicated, Mg.*
< 15	100
15 to 25	75
25 to 40	50
Over 40	25

In the present series most of the children who recovered after intravenous injection of the serum were given from 30 to 180 mils, the average total amount being about 130 mils, which was rarely given in more than two doses. As has already been mentioned, the serum was not concentrated.

On the other hand, the seven infants aged under two years (average, eleven months) who recovered after intramuscular administration of serum (see Table V) received an average total dose of 90 mils (minimum 30 mils, maximum 120 mils), the greatest amount given at any one time being 60 mils (to three patients).

Twelve hours after injection of the serum, which Alexander recommends should be given intravenously along with continuous infusion of glucose solution, tests are applied to ascertain whether its dose was sufficient to ensure circulation of free antibody. During the first week enough free antibody should be present in the patient's serum, when this is diluted 1 in 10 and added to a suspension of *Hæmophilus influenzæ*, to cause capsular swelling. Organisms present in the cerebro-spinal fluid (in which they may be preserved by the addition of formalin, 0·4%), if numerous enough, may be used for this purpose, or a young four to six hours' culture in Levinthal broth can be used if organisms are not available in sufficient numbers in the cerebro-spinal fluid. We have had little experience of this use of the Quellung reaction, but we believe that in hands less practised than those of Alexander and her colleagues it may be misleading. At the Children's Hospital, Melbourne, before the decision is made to give a further dose of serum, lumbar puncture is generally performed and attention is paid among other signs to the glucose content of the cerebro-spinal fluid; a low glucose content suggests that a further dose of serum is necessary.

Boisvert *et alii* (1944) report that they have injected the serum intramuscularly into five children, four of whom, all aged less than twenty-one months, recovered. In the present series the numbers within the age groups from birth to twenty-four months and twenty-five months or over who were given the serum intravenously, intramuscularly or by both routes are shown in Table V, in which the better recovery rate after intramuscular injection in the age group from birth to twenty-four months is significant ($P = 0{\cdot}033$). It may be thought that the serum was given intramuscularly to such children as were not acutely ill, and that it was given intravenously to those who were acutely or desperately ill. The clinical histories do not suggest that this was so; the disease was described by physicians as severe in six of the seven children who recovered in the age group from birth to twenty-four months. No fixed rule can be formed on the evidence available. To some children it would seem imperative to give the serum intravenously. To others a delay of four to six hours before maximum concentration of circulating antibody is reached would not seem to be of crucial importance. It may well be that an initial dose of serum intravenously followed up by a further amount intramuscularly will be found the most generally efficacious. Intrathecal injection of the serum is not recommended.

Alexander attributes the disappointing results of treatment in infants, particularly those aged under seven months, to late diagnosis. Meningitis is harder to recognize early in infants than in older children whose calvaria are rigid, and the physician may be reluctant to submit to lumbar puncture a baby who shows none of the textbook signs of meningitis. It is probably noteworthy, too, that the blood of young children after the age of two months lacks bactericidal power against *Hæmophilus influenzæ*, which is not usually demonstrable until after the third year (Fothergill and Wright, 1933). To judge from the well-known difficulty of immunizing young children, such natural antibody is not readily provoked in young children in response to infection. The delay in beginning specific treatment which results from late diagnosis may well be more dangerous therefore to young than to older children.

Bacteriological Diagnosis.

The following suggestions are put forward, especially for those in remote country districts, in the hope that they will facilitate the rapid identification of *Hæmophilus influenzæ*, type *b*.

As soon as meningitis is suspected, one of the sulphonamides should be given, lumbar puncture should be performed, and a Gram-stained smear should be prepared from a portion of the centrifuged deposit of cerebro-spinal fluid. If small Gram-negative rods or cocco-bacilli are found, a presumptive diagnosis of influenzal meningitis may be made and serum given. The identity of the organism may be tested by the Quellung reaction, although

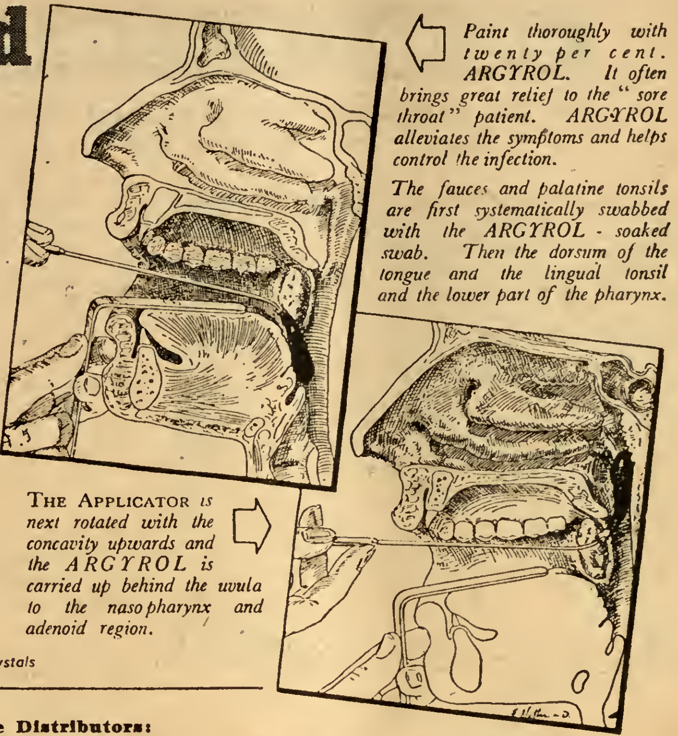
Pharyngitis and Tonsillitis

effective therapy with ARGYROL

BRAND SILVER VITELLIN

ARGYROL has proved its value for controlling infections of the nose and throat. Many eminent authorities have noted that the best results are obtained when ARGYROL is specified in all prescriptions. There are sound chemical and physical reasons for this. The silver in ARGYROL is in a much finer state of colloidal dispersion, also there is a far greater degree of Brownian movement, which logically must result in greater therapeutic activity. This is not true of ordinary mild silver proteins, for ARGYROL is the only silver salt that does not tend to become irritating with increased concentration. SPECIFY ARGYROL IN ALL PRESCRIPTIONS.

ARGYROL is issued in bottles of 1 oz. crystals



Paint thoroughly with twenty per cent. ARGYROL. It often brings great relief to the "sore throat" patient. ARGYROL alleviates the symptoms and helps control the infection.

The fauces and palatine tonsils are first systematically swabbed with the ARGYROL - soaked swab. Then the dorsum of the tongue and the lingual tonsil and the lower part of the pharynx.

THE APPLICATOR *is next rotated with the concavity upwards and the ARGYROL is carried up behind the uvula to the naso pharynx and adenoid region.*

Sole Distributors:

FASSETT & JOHNSON, LTD., 36-40 Chalmers Street, Sydney

THERE IS ONE AND ONLY ONE "ARGYROL", MADE ONLY BY A. C. BARNES COMPANY

Vitamin E in the Menopause

IN the *British Medical Journal* (July 3, 1943) four cases were reviewed in connection with the control of menopausal flushes by Vitamin E. The facts given suggested that Vitamin E may be an alternative to œstrogens and at the same time a safer method for combating menopausal flushes.

In a letter to the Editor (*B.M.J.*, October 23, 1943) a well-known authority on Vitamin E, in referring to the above-mentioned article, stated that, believing this vitamin to be a potent anti-œstrogen, he administered 'Ephynal' in large doses to menopausal women and he believed his results would compare favourably with those of physicians describing œstrogens.

A further report has just been published (*Amer. Journ. Obst. & Gyn.*, July, 1945). The investigation covered a period of six months and 25 patients ranging in age from 22 to 55 years.

"First reports of experimental use of this drug were astonishing. The entire group of cases responded to the treatment and showed either complete relief or very marked improvement with less frequency and less severity of the hot flushes and drenching perspiration, and a definite change for the better in their mood and outlook . . . Of these 25 patients seven reported complete relief of symptoms on dosages of 10 to 20 mg. daily over periods of from one to three weeks. Sixteen patients reported very marked relief on 10 to 20 mg. daily over periods of from two to six weeks. A great reduction in the number of hot flushes per day was evident promptly upon taking the prescribed medication, and the patient's general condition greatly improved."

'EPHYNAL'

Alpha-Tocopheryl Acetate

'Ephynal' is issued in bottles of 3 mg. tablets in 30's and 100's,
and 250's, and also 20 mg. Forte tablets in bottles of 20 and 100.

Further information and samples on request

ROCHE PRODUCTS LTD., WELWYN GARDEN CITY, ENGLAND

Sole Agents in Australia : **F. H. Faulding & Co. Ltd., 98, Castlereagh Street, Redfern Park, Sydney, N.S.W.**

'VARIBAN' Elastic Plaster BANDAGE (Regd.)

For the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

This Bandage is made from a specially woven selvedge material possessing very elastic properties and evenly spread with an Antiseptic Zinc Oxide Paste. It is self-adhesive, readily conforms to the shape of the limb and when carefully applied forms an even surface dressing which will not crease or slip, yielding an unusually firm support and yet permit of easy removal.

"VARIBAN" Elastic Plaster Bandages are extensively used in many well-known Hospitals for the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

The application of "VARIBAN" Elastic Plaster Bandages for the treatment of Varicose Ulcers, etc., does not necessitate the patient lying up, in fact permits the continuance of light duties. It ensures rapid healing and gives very substantial support to the affected limb.

Supplied in the following widths, 2½" and 3", and when stretched measure 6 yards (approximately).

Manufactured by

CUXSON, GERRARD & CO. LTD., OLDBURY, ENGLAND

Agents: MUIR & NEIL PTY. LTD., 479 KENT STREET, SYDNEY

"ALPHIDINE" NON-TOXIC IODINE IN RHEUMATIC AND RHEUMATOID CONDITIONS

"PALATINOID" "IOSAL" (O.S. & Co.) No. 7190

℞ *Alphidine* - gr. ⅛
Thyroid - - gr. ½
Acytosal - - gr. 4

The formula of this Palatinoid was suggested to us by Dr. Watt, of Guy's Hospital, London, and, in the opinion of leading Practitioners, it has proved the most valuable addition to Rheumatism therapy of recent years, and especially so in the case of elderly people. In menopausal Rheumatism and allied conditions, the results are of outstanding excellence, as evidenced by the case histories available.

"PALATINOID" ARTHRITAL (O.S. & Co.) No. 7421

℞ *Alphidine* - gr. ⅛
Guaiacum Resin gr. 2
Sulphur Praecip. gr. 2

In the Rheumatoid group this Palatinoid is described as the "Alphidine" Spa Treatment. In cases of Arthritis with thickening and set joints it has proved particularly effective. Its use in conjunction with Iodo-Salve as a topical application has been the subject of many favourable reports.

In bottles of 25, 100 and 1,000.

IODO-SALVE (IODISED BALMOSA)

A non-greasy snow-like cream that is rapidly absorbed. In localised pain and stiffness it exercises the characteristic effects of Iodine and the Salicylates. Useful also in Sciatica, Lumbago, Neuritis, etc. In ½oz. jars and 1oz. tubes and 16oz. jars.

Manufactured by

OPPENHEIMER SON & CO. LTD., LONDON

Samples and literature post free on application to:

Agents for Australia and New Zealand: MUIR & NEIL PTY. LTD., 479 Kent Street, SYDNEY

TABLE V.

The Number of Children Treated with Sulphonamides in Conjunction with Hæmophilus influenzæ, Type B, Rabbit Antiserum, into Whom the Serum was Injected Intravenously or Intramuscularly or by Both Routes, and the Numbers who Recovered within the Age-groups 0 to 24 Months and 25 Months and Over.

Age in Months.	Intravenous Administration.		Intramuscular Administration.		Both Intravenous and Intramuscular Administration.		Probability Factor: Intramuscular *versus* Intravenous Administration.
	Patients.	Recoveries.	Patients.	Recoveries.	Patients.	Recoveries.	
0 to 24	45	17	9	7	4	2	0·033
25 and over	17	15	4	3	2	2	0·5
Total ..	62	32	13	10	6	4	0·063

this is not advised in the case of those without experience of the technique.

The diagnosis may be confirmed within a few minutes in severe cases by the carrying out of a precipitin test on the clear supernatant fluid (Fothergill, 1937), as described above. Failure to elicit this reaction does not, however, exclude influenzal meningitis, and an attempt should always be made to grow the organisms from the remainder of the centrifuged deposit.

The only easily prepared medium on which *Hæmophilus influenzæ* grows freely is chocolate (cooked blood) agar (it grows very poorly on blood agar and ascitic agar). Chocolate agar, when prepared as follows, gives an early and abundant growth. Two mils of red blood cells from defibrinated horse blood (after the supernatant serum has been decanted) are added to 15 mils of melted nutrient agar at 56° C. and mixed, and the whole is heated for ten minutes at 78° C. The medium is then poured into plates and allowed to cool before it is inoculated from the remaining portion of the centrifuged deposit. If growth occurs, there is sufficient within twenty-four hours on which to carry out confirmatory tests, or the culture may be forwarded to a bacteriological laboratory for identification.

Three points are worth remembering: firstly, *Hæmophilus influenzæ* is a common cause of meningitis in young children, and influenzal meningitis is almost invariably associated with one serological type, type *b*; secondly, *Hæmophilus influenzæ* will not grow freely on any of the more commonly used media except chocolate agar; and thirdly, although it grows luxuriantly on this medium, it will die within perhaps four days or so if not sub-cultured.

In such a grievous disease as *Hæmophilus influenzæ* meningitis, even the moderate success here recorded is heartening. It should encourage the physician to continue treatment with one of the sulphonamides, which was probably begun on first suspicion of infection, and urgently to seek a bacteriological diagnosis in order that he may immediately reinforce whatever natural antibody may be present by injecting specific artificial antibody contained in rabbit serum.

Summary.

1. *Hæmophilus influenzæ* meningitis is usually third to tuberculous and meningococcal meningitis among other kinds of infectious meningitis in children. It is about three times more frequent in children aged under two years than in older children. It is rare in adults. Nearly all children aged under two years who receive no specific treatment die; a few older children recover (in the present series 4% aged over two years). Practically all cases are due to one serological type of *Hæmophilus influenzæ*, type *b*.

2. Of 157 children of all ages who received no specific treatment, two (1·2%) recovered; of 150 who were treated with sulphonamides, 32 (22·0%) recovered); of 81 who were treated with sulphonamides in conjunction with *Hæmophilus influenzæ*, type *b*, rabbit antiserum, 46 (56·8%) recovered.

3. Recovery under treatment was more frequent with each year of age. The worse prognosis in very young children was probably due to delay in the commencement of specific treatment resulting from late diagnosis, in consequence of the difficulty of recognizing meningitis early in very young children without resorting to lumbar puncture. It was possibly due also to the absence of natural antibody from the blood of young children and to their relatively poor immune response to infection.

4. One of the sulphonamides should be given. A bacteriological diagnosis should be urgently sought, and specific antibody contained in rabbit serum should be injected immediately the diagnosis is reached.

Acknowledgements.

Our indebtedness to members of the staff of different hospitals, both honorary physicians and other workers, has already been acknowledged in the text. We also wish to acknowledge the advice and help of Mr. J. J. Graydon, M.Sc., of these laboratories, particularly in assessing the statistical values of the results obtained. Finally, we desire to record our appreciation of the skill and enthusiasm of members of the staff of these laboratories, particularly of Mrs. M. Green and Miss O. Coe, without whose wholehearted cooperation sufficient serum for these clinical trials could not have been produced.

Bibliography.

R. Aléman: "Influenzal Meningitis", *New Orleans Medical and Surgical Journal*, Volume XCIII, July, 1940, page 25.

H. E. Alexander: "Type B Anti-Influenzal Rabbit Serum for Therapeutic Purposes", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XL, February, 1939, page 313; "Experimental Basis for Treatment of Hemophilus Influenzæ Infections", *American Journal of Diseases of Children*, Volume LXVI, August, 1943, page 160; "Treatment of Hemophilus Influenzæ Infections and of Meningococcic and Pneumococcic Meningitis", *American Journal of Diseases of Children*, Volume LXVI, August, 1943, page 172.

H. E. Alexander, C. Ellis and G. Leidy: "Treatment of Type Specific Hemophilus Influenzæ Infections in Infancy and Childhood", *The Journal of Pediatrics*, Volume XX, June, 1942, page 673.

H. E. Alexander and M. Heidelberger: "Chemical Studies on Bacterial Agglutination: V. Agglutinin and Precipitin Content of Antisera to Hemophilus Influenzæ, Type B", *The Journal of Experimental Medicine*, Volume LXXI, January, 1940, page 1.

McL. Birdsong, W. W. Waddell and B. W. Whitehead: "Influenzal Meningitis", *American Journal of Diseases of Children*, Volume LXVII, March, 1944, page 194.

P. L. Boisvert, M. D. Fousek and M. F. Grossman: "Intramuscular Administration of Anti-Hemophilus Influenzæ Type b Rabbit Serum: Report of its Use in Three Cases of Influenzal Meningitis", *The Journal of the American Medical Association*, Volume CXXIV, January 22, 1944, page 220.

M. Cooperstock: "Influenzal Meningitis in Siblings", *American Journal of Diseases of Children*, Volume LXVIII, October, 1944, page 269.

J. N. P. Davies: "Pfeiffer's Bacillus Meningitis. Response to Chemotherapy", *The Lancet*, Volume I, May 1, 1943, page 553.

Le R. D. Fothergill: "Hemophilus Influenzæ (Pfeiffer Bacillus) Meningitis and its Specific Treatment", *The New England Journal of Medicine*, Volume CCXVI, April 8, 1937, page 587.

Le R. D. Fothergill and K. D. Blackfan: "Complement in the Serum Treatment of Meningococcus Meningiis", *The Journal of Pediatrics*. Volume VII, 1935, page 731.

Le R. D. Fothergill and L. K. Sweet: "Meningitis in Infants and Children, with Special Reference to Age-Incidence and Bacteriological Diagnosis", *The Journal of Pediatrics*, Volume II, 1932, page 696.

Le R. D. Fothergill and J. Wright: "Influenzal Meningitis. The Relation of Age Incidence to the Bactericidal Power of the Blood against the Causal Organism", *The Journal of Immunology*, Volume XXIV, April, 1933, page 273.

K. Goodner, F. L. Horsfall and R. J. Dubos: "Type-Specific Antipneumococcus Rabbit Serum for Therapeutic Purposes; Production, Processing and Standardization", *The Journal of Immunology*, Volume XXXIII, October, 1937, page 279.

R. M. Greenthal and K. J. Winters: "Influenzal Meningitis: Report of Two Cases", *Archives of Pediatrics*, Volume LX, February, 1943, page 69.

W. H. Hall and W. W. Spink: "Sulfamerazine: Clinical Evaluation in 116 Cases", *The Journal of the American Medical Association*, Volume CXXIII, September 18, 1943, page 125.

T. R. Hamilton and F. C. Neff: "Influenzal Meningitis with Bacteremia Treated with Sulfapyridine: Recovery", *The Journal of the American Medical Association*, Volume CXIII, September 16, 1939, page 1123.

A. J. Hertzog, I. L. Cameron and A. E. Karlstrom: "Influenzal Meningitis in Brothers", *The Journal of the American Medical Association*, Volume CXXIV, February 19, 1944, page 502.

N. M. Jacoby: "Pfeiffer's Bacillus Meningitis: Recovery with Chemotherapy", *The Lancet*, Volume II, December 20, 1941, page 753.

R. D. Johnson and M. D. Fousek: "A Study of the Spread of H. Influenzæ, Type B", *The Journal of Bacteriology*, Volume XLV, February, 1943, page 197.

E. G. Knouf, W. J. Mitchell and P. M. Hamilton: "Survey of Influenzal Meningitis over a Ten-Year Period (1931-41)", *The Journal of the American Medical Association*, Volume CXIX, June 27, 1942, page 687.

J. W. Lindsay, E. C. Rice and M. A. Selinger: "The Treatment of Meningitis due to Hemophilus Influenzæ (Pfeiffer's Bacillus)", *The Journal of Pediatrics*, Volume XVII, August, 1940, page 220.

R. A. Moir: "Response of Pfeiffer's Bacillus Meningitis to Sulphapyridine", *The Lancet*, Volume I, May 1, 1943, page 556.

J. B. Neal, H. W. Jackson and E. Applebaum: "Meningitis due to the Influenza Bacillus of Pfeiffer (Hemophilus Influenzæ): Study of 111 Cases with 4 Recoveries", *The Journal of the American Medical Association*, Volume CII, February 17, 1934, page 513.

E. Neter: "Observations on Hemophilus Influenzæ (Type B) Meningitis of Children", *The Journal of Pediatrics*, Volume XX, June, 1942, page 699.

A. G. Nicholson: "Meningitis due to Hæmophilus Influenzæ: Review of Treatment", The Medical Journal of Australia, Volume I, April 8, 1944, page 320.

M. Pittman: "The 'S' and 'R' Forms of Hæmophilus Influenzæ", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XXVII, 1930, page 299; "Variation and Type Specificity in the Bacterial Species Hæmophilus Influenzæ", *The Journal of Experimental Medicine*, Volume LIII, April, 1931, page 471; "The Action of Type-Specific Hæmophilus Influenzæ Antiserum", *The Journal of Experimental Medicine*, Volume LVIII, December, 1933, page 683; "The Protection of Mice against Hemophilus Influenzæ (Non-Type-Specific) with Sulfapyridine", *Public Health Reports*, Volume LIV, September 29, 1939, page 1769; "Antibacterial Action of Several Sulfonamide Compounds on Hemophilus Influenzæ, Type B" *Public Health Reports*, Volume LVII, December 11, 1942, page 1899.

W. Sako, C. A. Stewart and J. Fleet: "Treatment of Influenzal Meningitis with Sulfadiazine: Preliminary Report", *The Journal of the American Medical Association*, Volume CXIX, May 23, 1942, page 327.

E. P. Scott and J. W. Bruce: "Influenzal Meningitis: Report of a Case with Recovery", *The Journal of Pediatrics*, Volume XX, April, 1942, page 499.

J. P. Scully and M. L. Menten: "Treatment of Influenzal Meningitis with Anti-Influenzal Rabbit Serum and Sulfapyridine", *The Journal of Pediatrics*, Volume XXI, August, 1942, page 198.

L. R. Seidman, J. H. Dingle and L. D. Fothergill: "The Identification of Precipitin with Mouse-Protective Antibody with Reference to the Evaluation of Anti-H. Influenzæ Sera", *The Journal of Bacteriology*, Volume XLIII, January, 1942, page 97.

N. Silverthorne: "Meningitis in Childhood", *The Canadian Medical Association Journal*, Volume XLVIII, March, 1943, page 218.

E. M. Sirlin and A. H. London: "Influenzal Meningitis: Case Report", *The Journal of Pediatrics*, Volume XVII, August, 1940, page 228.

E. K. Turner: "A Further Report on the Treatment at the Children's Hospital, Melbourne, of Influenzal Meningitis with Sulphonamides and Type-Specific Serum", The Medical Journal of Australia, Volume I, March 3, 1945, page 219.

H. K. Ward and Le R. D. Fothergill: "Influenzal Meningitis Treated with Specific Antiserum and Complement: Report of 5 Cases", *American Journal of Diseases of Children*, Volume XLIII, April, 1932, page 873.

H. K. Ward and J. Wright: "Studies on Influenzal Meningitis: I. The Problems of Specific Therapy", *The Journal of Experimental Medicine*, Volume LV, February, 1932, page 223.

D. Wilkes-Weiss and R. W. Huntington: "The Treatment of Influenzal Meningitis with Immune Serum", *The Journal of Pediatrics*, Volume IX, October, 1936, page 462.

J. Wright and H. K. Ward: "Studies on Influenzal Meningitis: II. The Problem of Virulence and Resistance", *The Journal of Experimental Medicine*, Volume LV, February, 1932, page 235.

A REPORT ON SIXTEEN CASES OF SUPRAGLOTTIC ŒDEMA.

By H. McLorinan,
Queen's Memorial Infectious Diseases Hospital, Fairfield, Victoria.

In 1941, Sinclair(1) described ten cases of acute laryngitis caused by *Hæmophilus influenzæ* and associated with bacteriæmia. In 1943, du Bois and C. Anderson Aldrich(2) reported four similar cases. It is the purpose of this paper to describe sixteen cases occurring at the Queen's Memorial Infectious Diseases Hospital, Fairfield, over a period of eighteen months during 1944 and 1945, the general clinical picture of which was similar to that described by the above writers. There were, however, certain variations to which reference will be made.

Fifteen of the patients were children, the youngest being aged two years and the oldest ten years. The remaining patient was an adult male, aged thirty-three years. There were two deaths, one of which occurred in the ambulance while the patient was on the way to hospital. All patients except one were examined within twelve hours of the onset of illness, and all were seriously ill with signs of severe respiratory obstruction. In nine instances tracheotomy was necessary, and in three a complicating purulent meningitis developed after a short interval.

The main clinical features were as follows.

1. There was a sudden onset of difficult, obstructed breathing in a previously well child. Grave symptoms developed within a few hours of the onset. There appeared to be no doubt that, in the cases at present under review, the obstruction was supraglottic and not subglottic, and was caused solely by enormous swelling of the epiglottis and aryepiglottic folds. This swelling was so great as to reduce the glottic opening to a narrow slit. There was no true laryngeal stridor, the voice was not hoarse, and the cough when present was not croupy. Both inspiration and expiration were difficult; but the expiratory obstruction appeared to be the greater. Expiration was always accompanied by a sound like a deep-seated snore. It was present in all cases and was considered to be a sign of great value in the diagnosis.

2. Prostration was always a prominent feature. Sinclair described the condition as "shock" for want of a better word. He makes the following statement: "This appearance of shock seemed out of all proportion to the relatively short duration of the obstructive symptoms." A recent article suggests an explanation for this prostration. Saphir reports five fatal cases of laryngeal œdema in which acute myocarditis was found at autopsy.(3)

3. The swollen, hard epiglottis and aryepiglottic folds could be easily palpated by passing a finger down the throat. Direct laryngoscopy was never necessary to confirm the diagnosis.

The history of a typical case is as follows:

A boy, L.H., aged four years, was admitted to hospital with a history of difficult breathing of three hours' duration. Other members of the household had suffered colds, but this child had been well prior to the attack. No previous attacks of asthma or other allergic signs had been noted.

On his admission to hospital, the child was pale and listless. A pronounced expiratory snore was noted. The voice was not hoarse, but it had a slightly "strangled" character. There was a slight cough, but it was not croupy. The throat was reddened, but the fauces were not swollen. A view of the swollen and congested epiglottis could be obtained by the use of the tongue depressor, and the diagnosis was confirmed by digital examination. Two hours after his admission to hospital—that is, five hours after the onset—prostration became more marked, pallor had increased and slight cyanosis of the lips was evident. Tracheotomy was performed under local anæsthesia. During the operation respiration ceased, necessitating hurried opening of the trachea and artificial respiration. A small amount of mucopurulent secretion was then expelled. The epithelial surface of the trachea appeared normal. Breathing was greatly relieved and the colour improved. Prostration persisted for twenty-four hours, and the child was disinclined to swallow fluids. His temperature on admission to hospital was 103° F. This subsided gradually, but did not return to normal for seven days. By the fourth day the œdema of the epiglottis had subsided sufficiently to permit removal of the tracheotomy tube. Recovery was then uneventful.

The only adult patient, a man, aged thirty-three years, was able to give a clear account of the symptoms of onset.

At the evening meal he noticed some pain on swallowing. His own description was that there was a painful lump in the middle of the throat. This appeared to become larger and more painful during the evening until it affected his breathing. He spent a restless night and at times became very distressed. He was admitted to hospital early the next morning. The clinical picture was typical, but pain was a more prominent feature and prostration was not so pronounced as in the case previously described. The cervical glands were tender, and some œdema of the tissues of the neck was present. He survived the dangerous period without operative interference and made an uneventful recovery.

Complications.

Three children developed purulent meningitis after the initial symptoms of obstruction had been relieved. In the first case meningitis was not diagnosed until fourteen days after the onset of illness, although indefinite meningeal symptoms appeared some days earlier. The second case of meningitis was diagnosed ten days and the third seven days after the onset of the obstructive symptoms.

Bacteriology.

Jackson(4) has described a condition called angioneurotic œdema of the glottis, in which the epiglottis is similarly swollen and œdematous. However, the absence of any previous allergic signs and the lack of response to adrenaline would appear to make this an unlikely explanation. The writers previously mentioned(1)(2) have shown that the causative organism was *Hæmophilus influenzæ* in the cases reported by them. The positive cultural findings in the blood would appear to be an adequate explanation of the prostration which occurred.

It must be admitted that the bacteriological findings in the present series have not been so happy or conclusive. At the time when most of these cases were investigated the literature on the subjct was not known, and no special effort was made to cultivate *Hæmophilus influenzæ* either from the throat or from the blood. Even after the finding of this organism in the cerebro-spinal fluid in two cases, it was thought that it was probably a secondary invader becoming active after the primary lesion.

Cultural examination of throat swabbings as a rule produced a growth of normal inhabitants of the respiratory tract, namely, green streptococci, Gram-negative diplococci and occasionally staphylococci. Swabs of throats were investigated by two other laboratories independently, with similar inconclusive results. An attempt to isolate a virus was also unsuccessful.

However, in view of the conclusive findings of the writers previously mentioned, and of the similarity of the clinical picture, it is reasonable to suggest that *Hæmophilus influenzæ* was associated with the condition. This opinion is strengthened by the fact that two of the three cases of meningitis which developed were due to *Hæmophilus influenzæ* Type B. In the third case a profuse growth of pneumobacillus of Friedländer was obtained from the throat, the trachea and the cerebro-spinal fluid. There may be still some doubt, of course, whether this was the primary cause of the original lesion.

Differential Diagnosis.

All sixteen patients were admitted to hospital with the provisional diagnosis of laryngeal diphtheria. To those accustomed to dealing with this disease the difference is obvious. The dramatic suddenness of the onset, the absence of true laryngeal signs and the absence of membrane are important points.

The condition known as laryngo-tracheo-bronchitis may present some difficulty. In this disease, which is frequently staphylococcal in origin, the onset may be rapid; but the obstruction is subglottic and due to thick, tenacious mucus in the larynx and trachea. There is no swelling of the epiglottis. Cases of asthma should not present any trouble, but retropharyngeal abscess may be difficult to exclude until a complete examination is made.

Confirmation of the diagnosis of œdema of the supraglottic region can be made with certainty either by direct vision or by digital examination. The latter method is to be preferred as being more rapid and certain and less distressing to the patient.

Treatment.

Tracheotomy was shown to be a life-saving operation in this condition. Intubation with O'Dwyer's tubes was attempted in a few early cases, but was never successful. It was performed with great difficulty owing to the narrowed glottic opening, and when it was accomplished the swollen epiglottis closed over the top of the tube. Indications for tracheotomy were obvious distress, prostration, pallor or cyanosis. So long as the colour remained good and the child appeared to have plenty of fight, tracheotomy was deferred. At the first sign of change of colour or development of signs of exhaustion, operation was performed without delay. The operation presented no special difficulty if carried out early, but if it was delayed until prostration had become severe, collapse was likely to occur during the operation. Speed was then essential. One patient died after operation as the result of an incompletely controlled hæmorrhage into the trachea. As a rule the post-operative management was not difficult. Unless the wound became infected there was little discharge from the tube. In this regard the nursing was much simpler than in laryngo-tracheo-bronchitis or laryngeal diphtheria, in which blockage of the tube is frequent. The average time for retention of the tube was five days; but in no case was it more than a week. The wound always healed readily.

Sulphonamides were given in every case, in the form of sulphathiazole, sulphadiazine or sulphamerazine. Penicillin was also used in some cases, but as the probable organism is penicillin-resistant, it is doubtful whether this measure played any useful part in the treatment.

All patients were treated in a steam tent before and after operation, and oxygen was used freely.

Most patients developed some degree of anæmia before recovery was complete; but transfusion was necessary in only one case. This was in the case of the child who developed meningitis due to Friendländer's bacillus, an infection which was controlled only after two prolonged courses of sulphadiazine.

Hæmophilus influenzæ rabbit antiserum was used only in the three cases in which meningitis developed. It was undoubtedly a factor in the patients' subsequent recovery. Whether its use early in the disease would have accelerated the recovery of the other patients or prevented the onset of meningitis is still open to doubt.

Summary.

Sixteen patients were admitted to the hospital over a period of eighteen months with a condition of œdema of the supraglottic region particularly affecting the epiglottis and the aryepiglottic folds. The clinical picture was one of severe prostration and rapidly developing respiratory obstruction caused by partial occlusion of the glottic opening. There were two deaths, one of which occurred in the ambulance before the patient's admission to hospital.

In nine cases tracheotomy was necessary. This is considered to be a life-saving operation in this condition, and the importance of its early performance is stressed.

The role of *Hæmophilus influenzæ* as the causative organism is discussed.

Purulent meningitis is a possible complication of the condition.

References.

(1) S. E. Sinclair: "Hæmophilus Influenzæ Type B in Acute Laryngitis with Bacteremia", *The Journal of the American Medical Association*, Volume CXVII, 1941, page 170.

(2) P. G. du Bois and C. A. Aldrich: "Hæmophilus Influenzæ Type B Laryngitis with Bacteremia; Report of Four Cases", *Journal of Pediatrics*, Volume XXIII, 1943, page 184.

(3) O. Saphir: "Laryngeal Edema, Myocarditis and Unexpected Death (Early Acute Laryngotracheobronchitis)", *The American Journal of the Medical Sciences*, Volume CCX, September, 1945, page 296.

(4) C. Jackson and C. L. Jackson: "Diseases and Injuries of the Larynx", Second Edition, 1942, page 82.

◆

THE STUDY OF THE HUMAN BODY AFTER DEATH.[1]

By Keith Inglis, M.D.,

From the Department of Pathology, University of Sydney.

"Men fear death as children fear to go in the dark", said Francis Bacon, and added: "It is as natural to die as to be born."

Throughout history study of the human body after death has been hampered by superstition and religious prejudice. This study has two main purposes: (i) anatomical, (ii) pathological. Knowledge of the normal anatomical structure of the body is an essential background for medical practice; knowledge of alterations wrought by disease is essential not only to establish the cause of death, but also for an understanding of the processes of disease in general.

Chronologically considerations of anatomy preceded those of pathology. In the time of Hippocrates (460 to 370 B.C.), anatomical knowledge was mainly gained from the dismemberment of animals slaughtered for sacrifices, and Aristotle (384 to 322 B.C.), a pupil of Plato, taught anatomy by the dissection of animals.

Dissection of the human body was first conducted on a fairy large scale at Alexandria in about 300 B.C. Three factors helped to establish anatomy as an independent science in Alexandria—namely, the practice of embalming the body, a lessening of religious prejudice, and the encouragement of the Ptolemies.

Galen (131 to 201 A.D.) followed the traditions of the Alexandrians, but he had not their opportunities of dissecting the human body. A long period of darkness followed Galen, and though there were occasional flashes of light, it was not until the time of Vesalius (1514 to 1564) that anatomy in the modern sense came to be revealed. Vesalius had difficulty in obtaining bodies for study, and it has been said that he secured his first human skeleton by stealing the remains of a hanged and roasted thief, outside the walls of Louvain (Ball).

When today you cross the Arno by the Ponte Vecchio and enter the heart of Florence, where the "David" of Michelangelo (1475 to 1564) is on one side and the "Perseus" of Cellini (1500 to 1571) on the other, you feel that you are in the atmosphere of the famous Florentine artist anatomists. Leonardo da Vinci (1452 to 1519) and Michelangelo did much of their dissecting in Florence and were among the artists who put new life into the study of anatomy.

Late in the sixteenth century, and at the commencement of the seventeenth, Fabricius (1537 to 1619) worked and taught at Padua, where Harvey was a pupil (1599 to 1603). During the eighteenth century an important factor in the advance of medicine was the presence in Great Britain of private schools of anatomy and surgery, especially that in Great Windmill Street, where William Hunter and John Hunter worked and taught anatomy, pathology and surgery. In the early nineteenth century the activities of the resurrectionists, especially in Edinburgh, became a matter of grave public concern, culminating in the murders committed by Burke and Hare. Burke at his trial was found guilty and addressed by the Lord Justice-Clerk as follows:

> Your sentence shall be put into execution in the usual way, but accompanied with the statutory attendant of the punishment of the crime of murder, *viz.*, that your body should be publicly dissected and anatomized.

In pursuance of the sentence of the court, Alexander Monro Tertius publicly dissected the body, and the following day not less than 25,000 persons viewed the remains of the murderer (Ball). In 1832 the *Anatomy Act* was passed, and body-snatching became a thing of the past. The act repealed the direction that the bodies of murderers should be dissected (Goodman).

An interesting historical review relating to "the supply of bodies for dissection" is presented by Goodman in the Arris and Gale Lecture (1944). Goodman discusses recent trends, the present position and the prospects for the future in Great Britain. In regard to the causes of diminution in supply he makes the following statement:

> The long-term cause which has been operating with gradually increasing force over the past 100 years is, of course, the improvement in the social and financial position of the poorest classes. Improvements in real wages, social legislation, and philanthropic efforts have all played their part, and there is little reason to expect that this process will not continue—indeed, certain aspects of social legislation already adopted in principle by the Government may be expected to have most important effects on supplies.

The same holds true for Australia, and unless some radical change is effected, the present lamentable situation with its inevitable lowering in standards of medical knowledge will become even worse than it is now. In my opinion the way to meet the situation is by educating public opinion along the right lines. I have great confidence in the commonsense and fairness of the man and woman in the street, and if they have the right example to follow I am sure they can be relied on to follow it. These people should be encouraged, by example as well as by precept, to leave written statements (accompanied by written consent of next-of-kin) expressing willingness for their bodies to be studied after death either by pathological post-mortem examination or by anatomical dissection. The example should be set by medical men, who are familiar with the problem, and who know precisely what is involved.

It was not until the time of Morgagni (1682 to 1771) that the human body was seriously studied after death from the point of view of pathology. The standard textbook prior to Morgagni's "*De Sedibus et Causis Morborum*" was Bonet's "*Sepulchretum Anatomicum*", which included a large collection of post-mortem reports from the sixteenth and seventeenth centuries. Morgagni's great book published in 1761 correlated clinical signs with pathological changes in the organs. Bichat (1771 to 1802), who laid the foundation of pathological histology, stressed the importance of tissues as contrasted with organs in the study of lesions in the body. As Long puts it: "Bichat formed the connecting link between Morgagni, who had so greatly influenced the teaching of organ pathology, and Virchow, who developed the concept of a pathology of cells." Facilities for the study of the human body from the point of view of pathology have greatly improved during recent years.

In the eighteenth century Morgagni worked in the Anatomical Theatre of Fabricius at Padua, which was built in 1594, and except for minor alterations remains unchanged to the present day. In this theatre there is a small area on the floor for the autopsy table, and six tiers completely surround the room. These tiers extend from floor almost to ceiling and are so narrow that onlookers must stand.

In the first half of the nineteenth century Rokitansky, working in Vienna, was an outstanding pathologist. Nine years ago the lecture theatre in Vienna, which seemed very old, had the autopsy table in front of the seats, which provided sitting accommodation for large numbers; those sitting at the back, however, were at a great disadvantage, because they were very little higher than those in front, and were too far from the body. In some American hospitals, about fifteen years ago, movable structures made of iron piping were wheeled around the autopsy table to form three sides of a square. This arrangement provided sitting accommodation for considerable numbers of students and gave a good view of the autopsy table, but the "seats" were not very comfortable.

---

[1] Read at the annual meeting of the Section of Neurology, Psychiatry and Neurosurgery of the New South Wales Branch of the British Medical Association on December 6, 1945.

A few years ago Lord Nuffield made a gift to the Royal Prince Alfred Hospital, Sydney, and this money, with more added, was used in building and equipping the Lord Nuffield Theatre of Pathology in the basement of the new Medical School of the University of Sydney. The amphitheatre is arranged to provide comfortable sitting accommodation for about eighty students, which corresponds to half the total number of students in an average year. A special system of lighting has been installed (in addition to that over the table), and when specimens removed from the body are held up to view under a bright light, the students in the back row are only about eight feet from them. Facilities for cutting immediate frozen sections are provided, and students participate in performing the examination of the body. Cooling of the cabinet in which the bodies are kept is adjusted to prevent decomposition but not to destroy the cellular structure of the tissues.

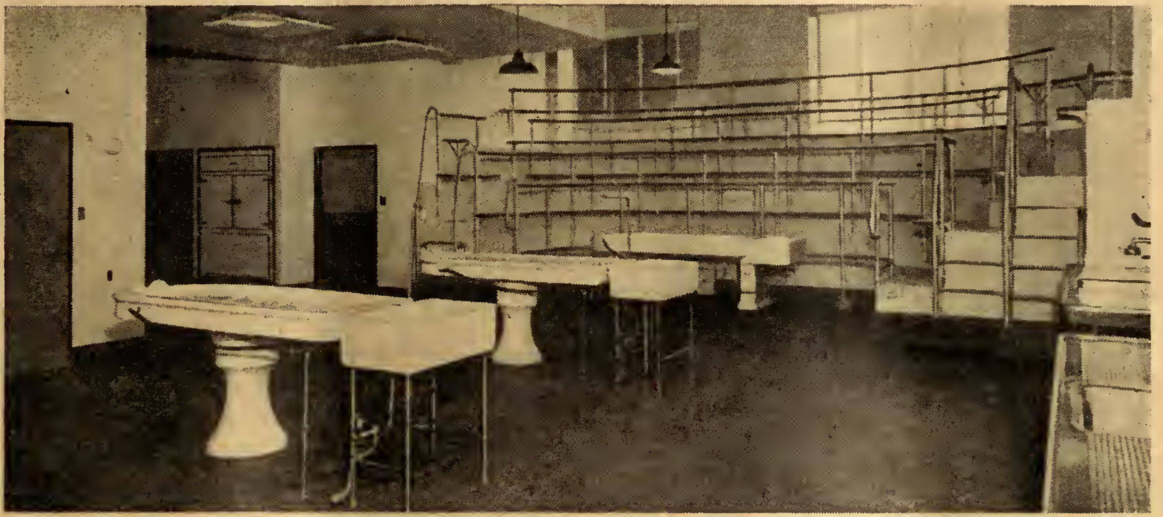


FIGURE I.

Lord Nuffield Theatre of Pathology (main theatre). The special system of illumination in front of the amphitheatre had not been installed when this photograph was taken.

A small chapel is in communication with the main theatre; in one end of this chapel is a viewing chamber, where the body is placed on a bier behind a large plate-glass window for inspection by friends of the deceased; a velvet curtain covers this window when the viewing chamber is not in use. Every endeavour has been made to show consideration for the relatives, and to make it clear to students that the term "dead-house" is obsolete and has been replaced by "theatre of pathology", a science laboratory where an endeavour is made to unravel the mysteries of disease.

Great advances have been made during recent years in diagnosis, but it still remains true that at a few autopsies the clinical diagnosis is shown to be completely wrong, and at a rather larger number partly wrong; even when the clinical diagnosis is confirmed, important abnormalities are often found which were unsuspected during life. Nearly a century and a half ago Bichat said:

> You may take notes, for twenty years, from morning to night at the bedside of the sick, upon the diseases of the heart, the lungs, the gastric viscera, etc., and all will be to you only a confusion of symptoms, which, not being united in one point, will necessarily present only a train of incoherent phenomena. Open a few bodies, this obscurity will soon disappear.

The same advice, in the main, holds good at the present day, and yet in our large metropolitan hospitals it is not unusual for a medical officer to fail to see the post-mortem examination of the body of a patient who dies while under his care, and a radiologist rarely seeks confirmation of a doubtful diagnosis in the autopsy room. For country practitioners the opportunity of checking clinical diagnosis by post-mortem examination seldom arises.

When a doctor does not ascertain what lesions were present in the body of one of his patients who dies, such a doctor may remain ignorant of the fact that some of the opinions he formed from clinical observation were entirely erroneous. This calls to mind the occasion referred to by Plato in "The Apology for Socrates", when Socrates approached a man who seemed wise to not a few but particularly to himself, and, after questioning him, went away saying: "This man imagines he knows, without really knowing. I, knowing nothing, do not even suppose that I know. On this point, at any rate, I appear to be a little wiser than he."

It used to be the custom to have a motto over the entrance portal to the post-mortem room in a hospital. At the Royal Prince Alfred Hospital the motto was "*In caelo quies*", and at the Sydney Hospital "*Etiam mortui prosumus*". It is true that even though dead we are of use, and indeed that is the theme of the present address; nevertheless it was thought that the public display of this motto might offend the sensibilities of some people, and it was not painted over the entrance to the new autopsy room in the Kanematsu Institute at the Sydney Hospital.

There appears recently to have been an awakening of interest on the part of some of our younger physicians in the study of diseased organs and tissues after death, and this is a hopeful sign for the future. I understand that it is proposed to establish more departments of pathology in country centres in this state, and these will prove a boon to country practitioners in their service to the people. The opinion has been expressed that the pathologists in these country centres should not be required to do work which calls for a knowledge of pathological histology, because of the need for long experience to gain confidence in this field of study. I do not concur in this opinion; no autopsy is complete without histological study of some organs and tissues, and sometimes the diagnosis cannot be determined until microscopic evidence is available, and even then occasionally remains uncertain. The performance of autopsies in large country centres is most desirable, as it is an important step in the direction of instituting clinical pathological meetings among groups of practitioners who are far removed from the metropolis.

While the encouragement of autopsies in widely separated centres is advocated, it must be recognized that some centralization of these activities is necessary in order that those who do the work may have enough practice to gain the requisite experience. An autopsy that is badly done might be better left undone. This calls to mind a request which came to the Department of Pathology of the University recently, that some attendants from a mental hospital should visit the Lord Nuffield Theatre of Pathology to pick up the essentials of post-mortem technique; I understand that a visit on one afternoon was contemplated. This request is reminiscent of the story which has been attributed to an eminent British bacteriologist. It is said that a young doctor called at this bacteriologist's laboratory to learn bacteriological technique while the wife of the young man waited in his motor car down in the street.

Bodies and museum specimens should be strictly anonymous so far as students are concerned; this rule is observed in all medical institutions of repute. Mixed medical museums are a mistake. Medical museums should be either for laymen or for scientists; those for scientists should not be open to laymen.

In the mental hospitals of New South Wales there are some 12,000 patients. In the larger institutions more laboratory facilities should be provided, and the number of autopsies performed should be greatly increased. The standard of service rendered by medical officers attached to mental hospitals would be raised considerably if they were given facilities for more extensive scientific investigation of the diseases from which their patients suffer.

Reports of Cases.

VOLKMANN'S ISCHÆMIC CONTRACTURE OF THE FOREARM.

By LEONARD BALL, F.R.C.S., F.R.A.C.S.,
Melbourne.

ISCHÆMIC contracture has long been looked upon as a sequel to tight bandaging or splinting, resulting in venous obstruction, although Volkmann himself, writing in 1881, considered it due to "a continuous stoppage of arterial blood".⁽¹⁾ A tight plaster cast may cause arterial obstruction, and further theories as to the production of ischæmic contracture are as follows: (i) contusion of a main artery, (ii) traumatic arterial spasm, (iii) arterial thrombosis or embolism, (iv) traumatic aneurysm or arteriovenous aneurysm. The condition most commonly follows suparcondylar fractures of the humerus, when the brachial artery may be injured or stretched across the lower end of the humerus.

The following case, occurring in a young lad suffering from a fracture of his olecranon without displacement, who had no treatment prior to the onset of his ischæmia, is of interest from both the medico-legal and the clinical aspects.

Clinical Record.

J.M.O'N., aged seventeen years, fell from a tram on to his right elbow at about midnight on June 4, 1944. His arm was painful, but not unduly so, and he slept fitfully through the night; but in the morning he had considerable pain in the forearm and was admitted to the Alfred Hospital at about 11 a.m.

On examination the forearm was seen to be tense, swollen and painful, and appeared fluctuant; complete anæsthesia was present from just above the wrist joint to the fingers. The swelling of the forearm did not involve the hand. There was complete paralysis of the muscles of the forearm and hand, and the radial and ulnar pulses were palpable and of good volume. On June 4, after consultation with Mr. Balcombe Quick and Mr. Fay Maclure, it was decided to open the forearm, in the hope that a hæmatoma might be present which could be evacuated.

At operation an incision was made along the entire length of the anterior surface of the forearm and the deep fascia was incised, considerable bulging of the muscles being produced. The brachio-radialis appeared normal and was retracted to the radial side. The *musculus flexor digitorum sublimis* (humeral head) appeared normal and was retracted to the ulnar side; thus the radial head of origin of the muscle was exposed. This latter was paler than normal and did not bleed easily, nor did it contract readily on stimulation. The muscle fibres were split and the *musculus flexor digitorum profundus* was exposed; this appeared normal, except that it was infiltrated with blood, presumably from the fractured olecranon. No attempt was made to suture the incision, and indeed, on account of the tension of the forearm, it would have been impossible to do so. The wound was dressed with "Vaseline" gauze.

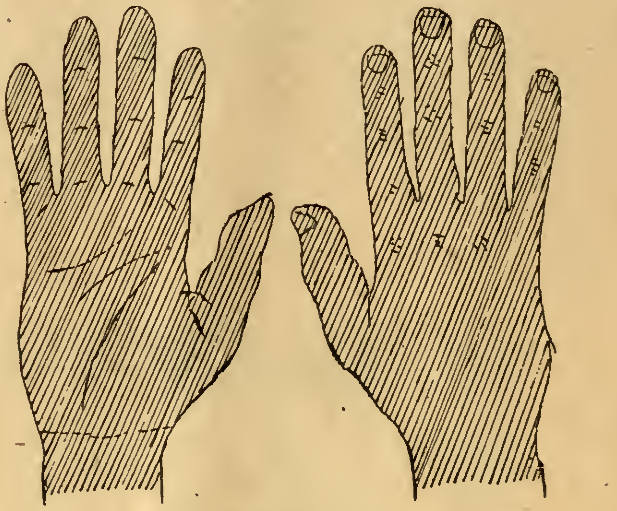


FIGURE I.
Showing level of anæsthesia on the patient's admission to hospital on June 5, 1944.

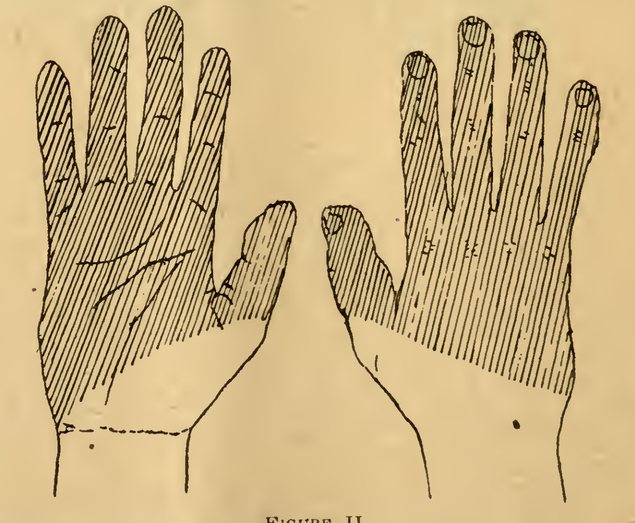


FIGURE II.
Showing level of anæsthesia on September 1, 1944.

On his return to the ward the patient's arm was kept elevated in a sling suspended from a framework above the bed, this being the position of greatest comfort for him. There was no evidence of post-operative infection, and on June 12 (one week after operation) the wound was dressed, when it was found that the swelling was considerably reduced and some passive movement of the wrist joint was possible. On June 19, at the next dressing, the swelling of the forearm had subsided still further, but there was considerable evidence of trophic changes in the fingers, especially on the dorsum of the proximal interphalangeal joints, where blisters were present. Complete anæsthesia was still found to exist.

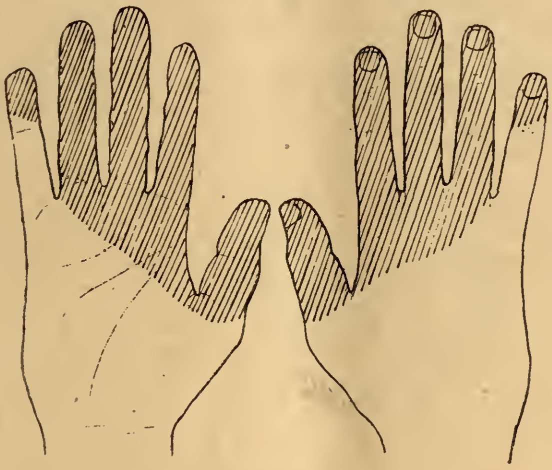


Figure III.
Showing level of anæsthesia on February 1, 1945.

The wound of the forearm healed without incident, and the hand and forearm gradually assumed the position typical of a Volkmann's ischæmic contracture. Attempts were made to prevent this deformity by splinting, but these had to be abandoned owing to the trophic changes in the fingers and hand, the slightest pressure causing blisters. The area of anæsthesia gradually became smaller, as is shown in Figures I, II, III and IV.

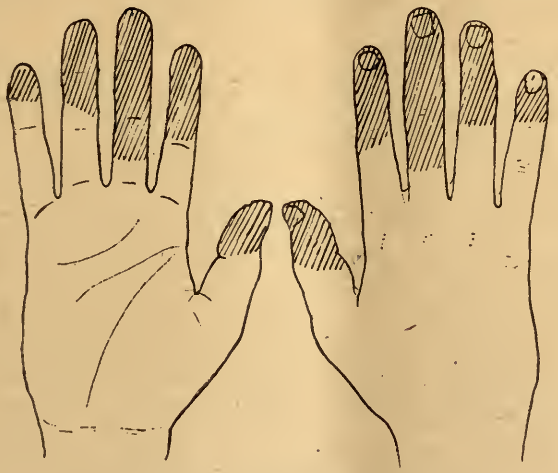


Figure IV.
Showing level of anæsthesia in July, 1945.

Although no special attention was directed to the fracture of the olecranon—in fact, the forearm was flexed on the arm during the period of treatment—the fracture united perfectly without any disability of the elbow joint.

Comment.

Although this patient developed a typical Volkmann's contracture (as shown in Figure VI), yet at operation the ischæmic process seemed to be limited to the radial head of his *musculus flexor digitorum sublimis*. However, other structures were involved, as was shown by the complete paralysis of his forearm and fingers and the total anæsthesia distal to his wrist. The anæsthesia slowly disappeared, and also presumably the motor nerve supply to the forearm muscles improved. The result may have been improved by an excision of this muscle, or perhaps a detachment of its origin at the time of the original operation.

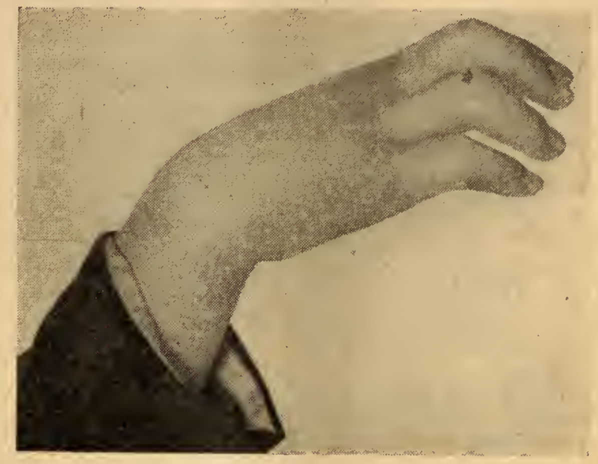


Figure V.
Photograph taken in September, 1944, showing developing ischæmic contracture and trophic changes.

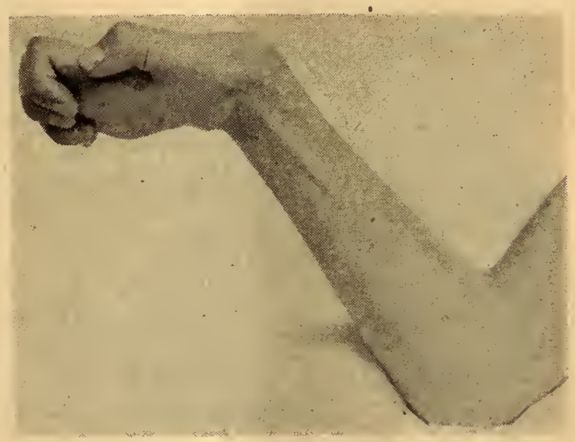


Figure VI.
Photograph taken in June, 1945, showing fully developed Volkmann's contracture.

It is fortunate for the doctor concerned that he did not examine the patient earlier, as it is probable that any treatment directed toward the fractured olecranon would have been blamed, or at least been considered a contributory factor, in the development of his ischæmic contracture.

Reference.

(1) R. Watson-Jones: "Fractures and Injuries", Third Edition, Volume I, page 121.

UNKNOWN FOREIGN BODIES IN THE LUNG.

By J. B. Cleland,
Marks Professor of Pathology, University of Adelaide.

A woman, aged thirty-three years, suffering from schizophrenia, died at a mental hospital at 7.30 p.m. on July 23, 1944. She had always been thin. She had suddenly become ill on the day on which she died, suffering from dyspnœa, a flushed face and physical signs of a pneumonic state. In the lower and anterior part of the upper lobe of the right lung was a red, consolidated area, one and a half inches (3·7 centimetres) in diameter, with pale specks in it, possibly minute abscesses. In the lower lobe of the right lung a superficial dark hæmorrhagic-looking patch was seen.

Microscopic examination of the affected lung revealed considerable consolidation, the alveoli being filled with coagulated exudate, red cells or polymorphonuclear cells, or in some places loosely with macrophages. Embedded here and there in the consolidated areas, and usually in groups, were a number of foreign bodies. These were oval in shape and varied in size (some measurements being 52μ—evidently cross section) from 83μ by 66μ to 116μ by 83μ. There appeared to be a thin capsule which stained a reddish colour with hæmatoxylin and eosin, and the contents seemed divided into about 10 or 12 spaces by reddish, irregular septa giving a vague honeycomb or reticular appearance. Sometimes these spaces looked as though they were independent oval structures. In one case the contents, which seemed to comprise four irregular elongated bodies, had shrunk, leaving apparently a capsule behind. With iodine a faint blue tint appeared. The bodies were quite unlike pollen grains. Professor T. Harvey Johnston did not recognize them as of animal origin (for example, ova) and Professor J. G. Wood considered that they were not vegetable in nature. Can anyone suggest what these bodies are from this description and the sepia wash drawing (Figure I)?

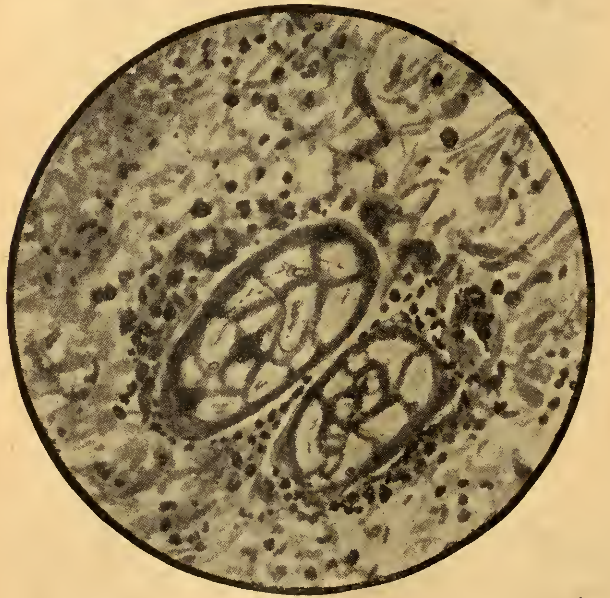


Figure I.
Drawing showing foreign bodies in lung, nature unknown.

Most of the bodies lay in what had been alveolar spaces, though some were amongst exudate and degenerated polymorphonuclear cells in small bronchioles. Those in the alveoli were usually surrounded by a ring of condensed nuclei, many of which were from polymorphonuclear cells, though, where organization of the exudate was taking place, some belonged to fibroblasts. Occasionally macrophages had united round a body in an alveolar space to form small foreign-body giant cells. The bodies were irregularly distributed in the sections, and in one low-power field 12 were counted; but in considerable areas of consolidated lung none were found. If these bodies were not responsible for the condition in the lungs as a whole, they certainly played an important subsidiary part.

TETANUS TREATED WITH PENICILLIN; RECOVERY.

By John L. Grove,
Launceston, Tasmania.

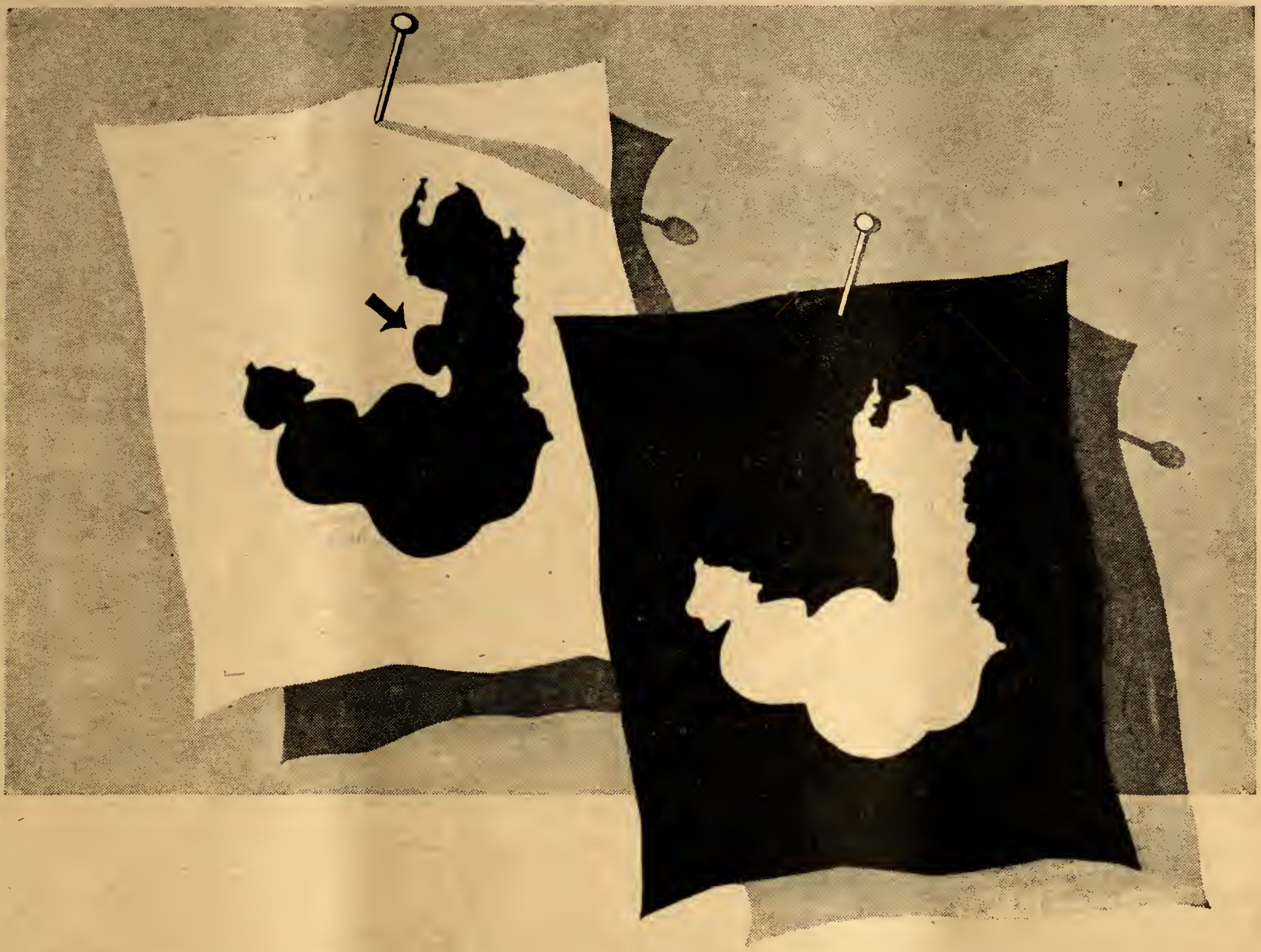
Clinical Record.

The patient, a male, aged twenty-four years, had been healthy except for chronic *otitis media*; this in 1940 spread to the left mastoid and gave rise to meningitis, which responded to sulphonamide therapy. He was perfectly well until five days before his admission to hospital. He is a motor truck driver, and on that day noticed that any heavy lifting gave rise to pain low in the centre of the front of his chest. This was not severe, and he was able to carry on with his work. Four days before his admission to hospital the symptoms were unaltered, except that at lunch time he had one sudden, severe, cramp-like pain in the chest, of short duration. He still worked and slept well that night. He suffered from no general malaise and no stiffness anywhere. Three days before his admission to hospital he was having fairly frequent attacks of cramp in the chest and abdomen, and was unable to work. He remained in bed and called a medical practitioner, who could detect no abnormality and considered the condition dyspeptic. That night he had several spasms of increasing severity and frequency, and these continued for the next two days and nights. By the morning of his admission to hospital, on May 13, 1944, he had become exhausted and called another medical practitioner, who found him gravely ill. He was admitted to a private hospital with a provisional diagnosis of acute appendicitis, and was examined by me at midday, by which time the diagnosis had become obvious.

On examination, the patient was sweating profusely and had a furred tongue and most offensive breath. Board-like rigidity of the abdomen was present, and any attempt at palpation brought on typical generalized tetanic spasms. His temperature was 101·6° F., his pulse rate was 124 per minute, and his respirations numbered 28 per minute. There was no wound except a small puncture on the right hand.

A diagnosis of tetanus was made and confirmed by a surgeon called in consultation in view of the provisional diagnosis mentioned above. Treatment with penicillin and serum was commenced immediately. Penicillin was given intramuscularly in doses of 20,000 units every three hours. The patient complained that the penicillin injections were painful, until the site was changed from the buttock and thigh to the deltoid, where the injections seemed to be quite painless. (This site, moreover, involves minimum disturbance of the patient.) Penicillin treatment was continued for ten days with a 25% reduction in dosage on the fifth day, a total of 1,710,000 units being used. Serum was given both intravenously and intramuscularly for the first three days, and thereafter intramuscularly only. Serum therapy was continued for twelve days, a total of 270,000 units being given. The nursing staff expressed the opinion that a definite improvement seemed to follow each dose of serum.

A variety of sedatives was used. "Avertin" was the sheet anchor. Twelve doses were given during the first nine days in hospital, the total used being 62·1 mils. At first the "Avertin" gave from six to eight hours' sleep with freedom from spasms, the period of relief gradually diminishing to about four hours. The only disadvantage of "Avertin" seems to be that while the patient is under its influence, it is difficult to keep up fluid intake. This had been noted in previous cases in which "Avertin" was used. In order to keep up fluid intake, it was necessary to give for periods between doses of "Avertin" a drug which gave a measure of control of spasms with at least reasonable freedom from pain, and yet allowed cooperation from the patient. Morphine filled this need well and gave rise to no anxiety. A total of four and five-twelfth grains was given. Morphine was on occasion combined with hyoscine, of which a total of one-tenth of a grain was given. "Nembutal" was tried on three occasions, but gave no



Rapid Healing OF PEPTIC ULCER

Healing of peptic ulcer at a rapid rate is the rule with Amphojel (Colloidal Aluminium Hydroxide Gel-Wyeth) Roentgenological re-examination after ten days of treatment often shows complete disappearance of the ulcer niche.†

† WOLDMAN, E. F., and POLAN, C. G.: The Value of Colloidal Aluminium Hydroxide in the Treatment of Peptic Ulcer: A Review of 407 Consecutive Cases, AM. J. M. Sc. 198: 155-164 (August) 1939.

SHAKE WELL
AMPHOJEL
WYETH'S
ALUMINA GEL

Prompt relief from pain

RAPID HEALING OF ULCER

Fewer recurrences

Less need for restricted diet

No alkalosis; no secondary acid rise

AMPHOJEL

Colloidal Aluminium Hydroxide Gel

The Medication of Choice in Peptic Ulcer

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

AIOM

PROMIN

Promin (Sodium p:p′-diamino-diphenylsulphone-N:N′-di-(dextrose sulphonate) is one of the few chemotherapeutic agents shown to be capable of inhibiting the tubercle bacillus.

Applied topically, 5 per cent. PROMIN JELLY has been used with encouraging results in the treatment of superficial tuberculous lesions ("British Medical Journal", December 26, 1942) and for the treatment of lupus, especially of the ulcerative type.

Promin Jelly is available in 2-oz. glass jars.

●

Further details
will be supplied on request.

●

Parke, Davis & Company, Limited
(INC. IN U.S.A.)

SYDNEY

relief. "Sodium Amytal" was found useful after the fifth day and toward the end of the illness, when spasms were decreasing in severity and number, it was used in place of "Avertin"; 87 grains of this drug were used in all. "Sodium Amytal" seems to have a place in the treatment of tetanus, but does not appear to be as useful as "Avertin" in the severe stages.

Spasms, which were precipitated by the slightest stimulus—for example, a motor car passing down the street outside the hospital—continued until the thirteenth day in hospital; 252 spasms were recorded. This is a conservative estimate, as no record was kept on the first day, and for some reason the staff did not usually record spasms occurring as the result of the naturally frequent attention to the patient. Abdominal rigidity persisted till the sixteenth day. The jaw stiffness persisted till after the patient's discharge from hospital on the nineteenth day. Even on the seventeenth day he could open his mouth only half to two-thirds of the normal extent.

His temperature ranged between 99° and 101·6° F. for the first six days and then gradually fell, remaining normal after the sixteenth day in hospital. The pulse rate, apart from that recorded during spasms, did not rise above 120 per minute, and it gradually settled with the temperature. The respiration rate was 44 per minute on the third day in hospital, and this also gradually fell with the temperature.

The urinary output for the first twelve days totalled 303 ounces, whereas the fluid intake was 819 ounces. The tremendous loss of fluid mainly by perspiration is one of the features of severe tetanus. In this case there was a loss of over three gallons of fluid in twelve days (not counting the actual loss of weight of ten pounds during the illness), and this bears out the need for strict attention to intake if dehydration is to be avoided. Diet was fluid until the fourteenth day (the last spasm occurred on the thirteenth day), when semi-solids were started. He was able to eat meat on the seventeenth day despite some residual stiffness of the jaw.

The bowels, which had last acted two days before his admission to hospital, remained unopened until the ninth day in hospital. Enemata were given twice without success and on each occasion seemed to make his condition temporarily worse. Finally the bowels opened into the bed in response to the last dose of "Avertin".

Comment.

While no conclusions can be drawn from one case, it was thought that an analysis of the records of previous patients treated in Launceston might be of interest. Records of 16 other patients since 1930 were traced; of these, seven recovered. The ages ranged from two to seventy-three years. The incubation period (which could not be determined in five cases) averaged five days in the fatal cases and eleven days in the others. The period of onset (that is, the period between the first symptom and the first spasm, which was not known in three cases) averaged 2·4 days in fatal cases and 2·5 in others.

Only two of the other patients who recovered could be classed with this patient as severely affected. In one of these cases the incubation period was 18 days, and although 388 spasms were recorded over eleven days, the patient's condition never gave rise to anxiety, his temperature being normal by the fourth day and remaining so. In the other case, in which the incubation period was unknown, the patient had spasms for six days and the initial temperature of 98·8° F. returned to normal after the second day in hospital.

It would seem fair to state that the case described is probably the most severe case of the series in which recovery occurred. As handicap additional to the severity of the disease, the patient was nursed in a private hospital by a staff none of whom had previously nursed a patient suffering from tetanus, and unfortunately in a noisy room. The patient had a rapid convalescence and has remained at his work since, apparently none the worse for his illness.

Reviews.

DERMATOLOGY.

After a period of seven years, Dr. E. H. Molesworth has presented a second edition of "An Introduction to Dermatology".[1] The first edition was reviewed at some length in this journal on April 10, 1937. Despite the difficulties associated with the war, Molesworth has found sufficient time and energy to produce a volume which is distinctly better than its predecessor. There has been some rearrangement in the subject matter. The chapters have been divided into seventeen instead of thirteen, and the number of illustrations has been increased by eleven. Molesworth admits the collaboration and influence of several overseas authorities, perhaps the best known being Dr. Frederick Goldschlag, late of Poland. In addition, Dr. R. Kaye Scott, of Melbourne, has brought the section on radium right up to date. However, as in the first edition, it is the pen of the experienced and dogmatic Molesworth which dominates, and this is as it should be.

Many dermatological authors include so many treatments (without indicating their personal preference) that an inexperienced practitioner may be at a loss to know just what to prescribe. This is far from the case with the author under review. His book is easy to read and the treatments are clear-cut.

Molesworth makes no claim that his textbook is complete. There are certain omissions, some of which are certain to be included in the next edition. It will now be convenient to enumerate some of them. (i) There is no reference to penicillin. This is, of course, explained by the fact that the book was in the press before this great therapeutic agent was available. (ii) As a textbook for students there should be one or two illustrations in a chapter dealing with the anatomy of the skin. (iii) There should be a special chapter devoted to drug eruptions. Certain eruptions due to the absorption of drugs are described here and there in the text, but the book would be far more complete with this inclusion. (iv) There is no reference to Thorium X, which has recently been advised for port-wine stains and tinea of the nails. (v) "Mouse plague" has been omitted from an excellent article devoted to fungous infection. Outbreaks of this form of tinea are not uncommon in certain of the wheat areas in Australia. (vi) Very little has been written concerning skin diseases under tropical war conditions. There is no description of a fairly common condition known by such names as tropical lichenoid dermatitis, New Guinea *lichen planus* or a *lichen-planus*-like eruption. Experience in tropical war conditions was only gathering when Molesworth completed this work.

It is not proposed to deal *seriatim* with every chapter; they are all consistently good, but the outstanding ones deal with the innocent and malignant tumours of the skin. Molesworth from his vast experience is at his best in dealing with the X-ray treatment of both rashes and tumours. Probably this aspect of his book will make the greatest appeal to the dermatologist and radiotherapist. For the student and general practitioner the interest may be only academic. Here is a definite technique laid down. There should be no misunderstanding in the interpretation of any dosage of X-ray therapy for a particular eruption or neoplasm of the skin. There are a few statements that need commenting on. (i) On pages 50 and 51, Molesworth has laid stress on the importance of avoiding chemical irritants in the treatment of simple skin diseases. He especially condemns the sulphonamides, and surely all experienced dermatologists are in agreement. A competent medical officer recently returned from the tropical areas stated that the commonest causes of dermatitis in these zones were sulphanilamide and acriflavine. If it did not spoil the appearance of the book, one would like to see a special chapter or article in big print condemning the indiscriminate prescribing of external irritants. (ii) X-ray treatment of eczema is discussed on page 55, and the following technique for obstinate cases is advised: 110 kilovolts, a filter of one millimetre of aluminium and a dose of 250*r*, the treatment to be repeated once a week for three applications. For the lichenoid or infiltrated type there may be no objection, but for the acute or subacute forms of eczema most authorities prescribe much more conservative doses. Molesworth may do likewise, but he does not make any mention of smaller doses. (iii) The incidence of *lupus vulgaris* in Australia is discussed on page 136, and the author states that he has seen only one person in Australia who developed this condition. Dermatologists in other States than New South Wales have seen occasional cases in subjects who have never been out of Australia, but the main point is that *lupus vulgaris* is a rare condition in this country. (iv) Thallium acetate epilation (page 210) is still recommended in certain circumstances for *tinea capitis*. Many now consider that thallium acetate should no longer play a part in the treatment of ringworm of the scalp, and the Ministry of Education of England does not sanction its use (*British Medical Journal*, September 15, 1945, page 348). Molesworth has given detailed instructions which have been successful in several hundred cases. (v) Iontophoresis (page 215) is favoured for the treatment of otherwise resistant ringworm conditions between the toes. This is a new form of therapy. It would be interesting to know the incidence of recurrences under hot conditions. (vi) X-ray treatment for certain types of *lupus erythematosus* is advocated (page 402). It has been handed down or taught for years that X-ray treatment is contra-indicated in this condition. It is thought that its application may produce skin cancer. Molesworth is emphatic that in the dosage he employs this complication has never occurred. (vii) X-ray treatment of vascular nævi is mentioned on page 433. The author has for years used this method, and to him largely belongs the credit for its present popularity in Australia. With the introduction of the new shock-proof X-ray plants, this treatment is simplified. What took hours or days to do with radium may be achieved in a matter of minutes.

---

[1] "An Introduction to Dermatology, with a Chapter on the Theory and Technique of X-Ray and Radium Therapy", by E. H. Molesworth, M.D., Ch.M. (Sydney), F.R.A.C.P., Dip. Rad. (Sydney), with a Foreword to the First Edition by Professor Josef Jadassohn; Second Edition; 1944. Sydney: Angus and Robertson, Limited. 8½" × 5½", pp. 592, with 162 illustrations in the text. Price: 37s. 6d.

The book ends with a notable chapter by Dr. R. Kaye Scott, entitled "Technical Aspects of Radium Therapy in Dermatology". It is probable that no better or more concise article has ever been written. Unfortunately it is a fact that certain practitioners with little or no training in radiotherapy possess radium plates. Their dosage and results are often uneven, especially when they treat early squamous-celled carcinoma. Scott has clearly explained how the dosage of plates tends to be greater in the centre and weaker at the margin. Those who dabble with radium are exhorted to study this chapter.

In conclusion, this textbook can be confidently recommended to students, practitioners and dermatologists. For the last-mentioned it is especially valuable for its presentation of the subject of radiotherapy. This volume is a credit to Australian dermatology and is worthy of a place in any medical library in the world. More than a word of praise is due to the publishers, for the paper, print, binding and illustrations are of high order.

SURGERY OF THE RECTUM.

Gabriel's excellent work, "The Principles and Practice of Rectal Surgery", now appears in a third edition.[1] As stated in our reviews of earlier editions, the work is of considerable merit. The reader is taken along quietly, a start being made with an interesting, instructive and elaborate chapter on the surgical anatomy. The diagnosis of rectal conditions and the general principles of rectal surgery are then discussed. Thus the simplest of rectal diseases and their symptomatology and treatment are dealt with in turn, until finally, one of the most difficult of all surgical abdominal conditions is elaborated upon, namely, malignant disease of the rectum. In giving a separate chapter to malignant disease of the anus, the author appears to be splitting straws, but as the lymphatic spread of the anus is different from that of the rectum, the only comment that can be made is that such a diversion is in keeping with the thorough set-up of the book.

The diagrams dealing with the anatomy are masterly, and those of operative technique are easy to follow; it is interesting to learn that "old piles" give little response to injection. Apparently piles must be caught early for success with injection. It is questionable whether correction of habits will not effect a cure in many early cases of piles without recourse to injection, much less to surgery, being necessary.

A most interesting chapter appears dealing with rectal prolapse. It is surely very rare to see prolapse so extensive as to necessitate partial colectomy. In such cases Roscoe Graham considers that the fault lies in the anterior rectal wall. Surgeon Rear-Admiral Gordon Taylor is quoted on page 236 in the discussion on rectal injuries in war.

Some Australian surgeons serving with the Australian Imperial Force in the Middle East think that colostomy is a wise step always in anticipation of trouble after rectal injury. About a hundred pages are devoted to carcinoma of the rectum and every page is interesting. Some years ago an American writer said, "No surgeon can discuss intelligently cancer of the rectum without quoting Ernest Miles at every page", yet we find no description of his work, only a mere reference where to find it. It is surely not good surgical technique to turn into the abdomen a structure from a dirty area like the anus.

If perineo-abdominal excision is carried out in one stage, there will be times when the growth is so enormous that an equally large opening will have to be made in the iliac region to bring the mass out to establish a left inguinal colostomy. In any case it appears a laborious procedure to open the abdomen for inspection and then, when operation is approved, to start operating at the perineum, and when finished there to return to the abdomen for completion of the operation. Preliminary colostomy is often a necessity. Many a patient with a supposedly inoperable tumour improves considerably after a colostomy. Even patients with cardiac failure have been made fit for operation after a preliminary colostomy and have lived for years after radical operation. In obstructive types of growth, when effective lavage is not possible, preliminary colostomy is indicated. It is noted that in about 40% of the author's cases, when all ages are taken into consideration, tumours are inoperable. Lower percentages are claimed by some Australian surgeons and preliminary colostomy in doubtful cases has much to do with the lower figures. If patients are carefully selected for radical operation, there need be no mortality rate, and with the advent of the sulphonamide drugs the fear from sepsis is lessened considerably. In previous criticism of this really excellent work the advocacy of perineo-abdominal excision of the rectum for cancer as a routine measure has been questioned when so much can be said for the abdomino-perineal operation of Ernest Miles.

DISEASES OF THE CHEST.

The second edition of "Introduction to Diseases of the Chest", by James Maxwell,[1] will be welcomed by both teaching physicians and students, and although, as stated in the preface, the book is slightly smaller, the quality is still the same. The physical examination of the chest is described in a manner that would have pleased even Laennec, and the analysis of the symptomatology is noteworthy for its clarity. The importance of the habits, occupation and background of each individual patient in relation to the history of his disease is stressed.

Students especially will appreciate the chapter on radiology, in which the radiological appearances of the various chest conditions are discussed. The illustrations, most of them reproductions of skiagrams, are excellent, and printed as they are all together at the end of the volume, they enable an easy comparison of the various appearances to be made.

The many factors concerned in the causation of asthma are well discussed and the chapter on this subject contains all that students need to know. The pneumonias are dealt with fully, and the fact that forty-five pages are allotted to pulmonary tuberculosis is an indication that this important subject is treated adequately. The technique of collapse therapy is well described.

From an Australian viewpoint it is strange to find that hydatid disease of the lung is merely mentioned in a few lines and that no account of the treatment of this widespread disease is given. This would appear to be similar to finding little mention made of malaria in a textbook of medicine, published in any country just because there happened to be no Anopheles mosquitoes in that country. Even assuming that the disease is relatively uncommon in Great Britain, all students should know the special tests used in its diagnosis, and also the surgical technique used in its treatment.

Another surprising omission is to find no mention made of penicillin therapy, but this perhaps is explained by the fact that the preface is dated May, 1944, although the book was not published until eleven months later.

---

[1] "The Principles and Practice of Rectal Surgery", by William B. Gabriel, M.S. (London), F.R.C.S. (England); Third Edition; 1945. London: H. K. Lewis and Company Limited. 9¾" × 6", pp. 442, with many illustrations. Price: 45s. net.

[1] "Introduction to Diseases of the Chest", by James Maxwell, M.D. (London), F.R.C.P. (London); Second Edition; 1945. London: Hodder and Stoughton Limited. 8½" × 5½", pp. 335, with many illustrations. Price: 12s. 6d. net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 16, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

"PALUDRINE."

THE special article that appears on page 234 is one of the most important that has been published in this journal. It deals with the discovery and evaluation of "Paludrine", the new and potent antimalarial drug, and it shows how valuable have been the researches carried out at Cairns by the team of Australian workers of whom Brigadier N. Hamilton Fairley was director. The article should be read in conjunction with a leading article entitled "Triumph Against Malaria", which appeared in the *British Medical Journal* of November 10, 1945, of which every member of the British Medical Association in Australia should have received his copy. Though these two articles will give to Australian doctors the most up-to-date information on "Paludrine", there are several points in our special article on which stress should be laid.

In the first place it should be made quite clear that headquarters of the Australian Military Forces was in no way responsible first for its silence, and then for what must have appeared to some persons as an equivocation on its part, when it denied officially that "Paludrine" was being extensively investigated in Australia. The unfortunate double use of the name created a difficulty. In 1944 the name "Paludrine" was given by Imperial Chemical Industries, Limited, to a compound not so effective as the new drug and known in their laboratories as M.3349. When the British Press and radio announced the discovery of "Paludrine" (the newer and more effective agent with the laboratory name of M.4888, not the previously known M.3349), there was not sufficient time to notify the Australian Army authorities either that the name "Paludrine" had been given to M.4888 or that "security silence" in regard to it had been lifted. Later on, when Dr. D. G. Davey, the discoverer of "Paludrine" with F. H. S. Curd and F. L. Ross, was in Australia, a Press conference was called by the Director-General of Medical Services at Victoria Barracks, Melbourne, and a statement was given to Press representatives. With one or two exceptions the Press did not publish an accurate account of these statements. These happenings do not detract in any way from the value of the work that has been carried out at Cairns by the team of officers from the Australian Army Medical Corps. It is to the high value of this work that attention should next be directed. When Dr. D. G. Davey was in Melbourne he said that as a result of the work of the research unit at Cairns, "we have learnt in six months what might easily have taken years in the ordinary way". The work at Cairns has, in the words of our special article, "confirmed and extended in human malaria the results obtained by Dr. D. G. Davey and his team in bird malaria". The most important conclusion drawn from this work is that "Paludrine" in non-toxic dosage is a true causal prophylactic in malignant tertian malaria and a partial causal prophylactic in benign tertian malaria. In this it is superior to all known antimalarial drugs. Special mention should also be made of the difference, described as "considerable", which exists between the effective therapeutic dose and the toxic dose. The discovery of this "most potent antimalarial drug known" is indeed a triumph for British chemotherapy. We do well at the same time to reflect that what appeared in the early stages of the war with Japan to be a dire and irreparable disaster, provided an opportunity and a stimulus to research, for the results of which mankind will never cease to be grateful.

THE FEDERAL MEDICAL WAR RELIEF FUND.

FOR some considerable time before the fighting ceased in the recent war, the Federal Council of the British Medical Association in Australia had before it proposals to establish a Federal Medical War Relief Fund. The question was not whether a fund should be established, but when was the most suitable time for such an important action. That a war relief fund would find an enormous field for its activities and would be of untold benefit to incapacitated service medical officers and their dependants was clear from the experience gained with the Federal Medical War Relief Fund established in connexion with the war of 1914-1918. From May, 1919, when that fund began to be administered, until December 31, 1945, loans of varying amounts, totalling £23,752, had been made to 47 persons. As a matter of fact, loans are still being repaid by five beneficiaries who are entitled to this assistance. During the existence of the fund 32 persons have received from the fund gifts amounting in all to more than £10,066. At December 31, 1945, seven persons were receiving regular assistance from the fund, and these included widows, unmarried daughters and children of deceased medical officers whose education is not yet complete. To this record of achievement must be added the fact that the cost of administration of the fund from its inception has amounted to only £778 3s., an average of less than £30 a year. At December 31, 1945, the assets on hand amounted to £9,097 15s. 4d. It should perhaps be pointed out that this fund can be used only for beneficiaries affected by the war of 1914-1918. At its meeting in September, 1944, the Federal Council resolved to establish a Federal Medical War Relief Fund in connexion with the recent war and set out the objects of the fund under the following six headings.

1. To assist members of the medical profession who have been disabled and the dependants of those who have died as a result of enemy action or of sickness contracted while serving in the armed forces.

2. To issue loans with or without interest to medical men who, as a result of enemy action, may require temporary financial assistance.

3. The fund be established by donations from members of the profession in all of the States, and to commence the fund an effort should be made in each State to secure at once as large initial donations as possible.

4. The fund to be controlled by the Federal Council.

5. A local committee of management to be appointed by the Branch Council in each State consisting of three members of the British Medical Association.

6. The Federal Council to have the power to use any surplus funds for the purpose of medical benevolence.

At its meeting in March, 1945, the Federal Council received the approval of the six Australian Branches of the Association and it proceeded to appoint as trustees of the fund Dr. George Bell, Dr. W. F. Simmons and Dr. G. C. Willcocks. It also decided that each Branch Council should be asked to appoint a local committee of management consisting of three of its members. The legal advisers of the Council were also to be consulted in regard to the drawing up of a deed of trust for the fund. The deed of trust was presented to the Council at its meeting in October, 1945, and adopted. Everything is thus ready for the launching of the appeal for donations to the members of the Branches.

In a matter such as this it should not be necessary to go into long explanations of why a fund such as the Federal Medical War Relief Fund should come into being and why every single member of the medical profession should give not merely, in the words of another appeal that is sometimes made, as his circumstances in life may fairly warrant, but in such a way that his gift will represent a personal sacrifice. There may possibly be some who would suggest that the State which accepted service from medical men and women should and will, in the event of their decease, accept the burden of caring for their dependants or of helping them with gifts or loans of money if their peculiar circumstances should call for such action. This is a specious kind of argument that will be made only by non-medical persons who cannot see things in their true perspective. The great majority of medical practitioners will not think along these lines. If large numbers of doctors could be credited with ideas of this kind the many schemes for the protection of practices would not have been so successful as they have been during the war and a spirit of comradeship would not have been so evident as it is today. Men and women who have served with the three branches of the armed forces have been named in these columns as being among the cream of our citizens. They have given freely of all that they had and many have given their lives. It is little to ask that we, the men and women who have come through this upheaval, some of us scatheless, some with scars of one kind and another, shall give aid to our own kith and kin, our own brothers in medicine, or to those dependent on them if they are in need. The State will do a certain amount, it is true, but no government, no statutory body that has to be bound by regulation and red tape, can give so personal, so sympathetic or so complete a kind of assistance as has been given by the Medical Relief Fund of the war of 1914-1918. The fund now to be established will do the same and more, and it covers the widest possible field—its provisions will apply to all medical practitioners and not merely to those who are members of the British Medical Association. The objective set is £50,000. Some will give large amounts; others will not be able to do this. But what is important is that every member shall give something. For those who from necessity or habit pay attention to these things, it may be mentioned that gifts to the fund will be subject to the concessional rebates of tax provided by Section 160 (2) (*g*) (iii) of the *Income Tax Assessment Act*, 1936-1945. A personal appeal is being addressed to every Branch member by the President of the Federal Council. In case the President's appeal should not be noted or interest should not be stimulated without delay, readers will help if in their chance meetings with their colleagues they become persistent publicity agents. Every member will do well to remember the old tag: "*Bis dat qui cito dat.*"

Current Comment.

RETROPUBIC AND EXTRAVESICAL PROSTATECTOMY.

A recent report by Terence Millin on what he calls retropubic prostatectomy by a new extravesical technique[1] has received such glowing commendation from *The Lancet* that critical notice must be taken of it. In performing this operation, Millin uses low spinal anæsthesia with "Pentothal" or with "Pentothal" and "gas-oxygen". Cysto-urethroscopic examination is made to exclude unexpected pathological changes in the bladder and to study the configuration of the gland. After the bladder has been emptied an incision is made in the middle line, extending upwards from over the pubis for a distance of two and a half to three inches, depending on the obesity of the patient. The aponeurosis is incised in the length of the wound. The recti are separated in the middle line and the index finger sweeps upwards to the retropubic fat and the retroperitoneal fold, and a modified Harris self-retaining retractor is introduced. The veins running upwards on the anterior and lateral aspects of the prostate in the prevesical layer of the endopelvic fascia are underrun and ligated. The fat still adherent to the lateral aspects of the gland is gently sponged downwards and outwards. A medium-sized swab is pushed into each lateral recess. With a diathermy knife or number 15 Bard Parker a curved transverse incision, convex downwards, 1·0 centimetre distal to the bladder neck, is made through the prevesical fascia and true prostatic capsule. The lower flap is undermined towards the apex of the gland and the upper flap retracts owing to the pull of the severed pubo-vesical muscles. The false capsule is now exposed and an inverted-V incision is made down to the adenoma. The lateral lobes are freed from the false capsule and the dissection is continued with either forceps or finger. The lateral lobes, and when it is present the middle lobe, are freed digitally from below upwards until they present in the wound, being attached solely in the region of the bladder neck. The adenomatous mass is detached with scissors or diathermy knife. The edges of the capsule are secured with four pairs of Allis forceps. By traction on these and by suitable manipulation of flexible lamp and sucker the prostatic bed is carefully inspected. The two prostatic arteries, if not already secured, are coagulated,

---

[1] *The Lancet*, December 1, 1945.

TRADE MARK

'S.V.C.'

BRAND

acetarsol vaginal compound

in leucorrhoea

In the treatment of leucorrhœa associated with the presence of T. vaginalis, formerly so intractable a condition, 'S.V.C.' brand of acetarsol vaginal compound is frequently effective. The product is available in the form of tablets of elongated shape, for insertion, each tablet containing grains 4 of acetarsol. It is also of interest to note that the formula of the Compound is designed to aid in the restoration to its normal value of the pH of the vaginal secretions.

'S.V.C.' tablets are available on prescription as follows:

Containers of 25 tablets	**6/6**
Containers of 100 tablets	**17/6**

The above prices, which are subject to the usual professional discount, do not include any recording fee which may be charged, with the approval of the Prices Commissioner, by the dispensing pharmacist.

Manufactured by

MAY & BAKER LTD.

Dagenham, England

Distributors:

MAY & BAKER (AUSTRALIA) PTY. LTD., SYDNEY

CHURCHILL'S NEW BOOKS

CHEST EXAMINATION: The Correlation of Physical and X-Ray Findings in Diseases of the Lung
By R. R. TRAIL, *M.C.*, M.D., F.R.C.P. *Second Edition.* 100 Illustrations. 12s. 6d.

CANNED FOODS: An Introduction to Their Microbiology
By J. G. BAUMGARTNER. *Second Edition.* 27 Illustrations. 12s. 6d.

MICROANALYSIS IN MEDICAL BIOCHEMISTRY
By E. J. KING, M.A., Ph.D. 10 Illustrations. 10s. 6d.

SURGICAL NURSING AND AFTERTREATMENT
By H. C. RUTHERFORD DARLING, M.D., M.S., F.R.C.S. *Ninth Edition.* 211 Illustrations. 12s. 6d.

THE CHEMICAL ANALYSIS OF FOODS: A Practical Treatise on the Examination of Foodstuffs and the Detection of Adulterants.
By H. E. COX, Ph.D., D.Sc., F.R.I.C. *Third Edition.* 41 Illustrations. About 21s.

PRINCIPLES OF HUMAN PHYSIOLOGY (Starling)
Edited and Revised by C. LOVATT EVANS, D.Sc., F.R.C.P., F.R.S. *Ninth Edition.* 668 Illustrations, 7 in colour. 36s.

CLINICAL PATHOLOGY
By P. N. PANTON, M.B., B.C., and J. R. MARRACK, *D.S.O.*, *M.C.*, M.D. Revised with the assistance of H. B. MAY, M.A., M.B., M.R.C.P. *Fifth Edition.* 12 Plates (10 coloured) and 45 Text-figures. 21s.

QUANTITATIVE ORGANIC MICROANALYSIS (Pregl)
Fourth English Edition. Revised by JULIUS GRANT, M.Sc., Ph.D., F.R.I.C. 94 Illus. 21s.

DISORDERS OF THE BLOOD
By SIR LIONEL WHITBY, *C.V.O.*, *M.C.*, M.D., F.R.C.P., D.P.H., and C. J. C. BRITTON, M.D., D.P.H. *Fifth Edition.* 16 Plates (12 coloured) and 70 Text-figures. 30s.

MEDICAL EMERGENCIES
By C. NEWMAN, M.D., F.R.C.P. *Third Edition.* 10s. 6d.

Reprints

A HANDBOOK OF OPHTHALMOLOGY
By H. NEAME, F.R.C.S., and F. A. WILLIAMSON-NOBLE, F.R.C.S. *Fifth Edition.* 12 Plates, containing 46 Coloured Illustrations and 189 Text-figures. 18s.

SYNOPSIS OF REGIONAL ANATOMY
By T. B. JOHNSTON, M.D. *Fifth Edition.* 17 Illustrations. 16s.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY AND THERAPEUTICS (Hale-White)
Twenty-sixth Edition. Revised by A. H. DOUTHWAITE, M.D., F.R.C.P. 14s.

MEDICINE: Essentials for Practitioners and Students
By G. E. BEAUMONT, D.M., F.R.C.P., D.P.H. *Fourth Edition.* 71 Illustrations. 28s.

J. & A. CHURCHILL LTD., 104 GLOUCESTER PLACE, LONDON, W.1

FELLOWS'

COMPOUND SYRUP

OPEN CAREFULLY.
FELLOWS'
Compound
Syrup

FORMULA: Each fluid drachm contains

Strychnine Hydrochloride	Gr. 1/64	Calcium Hypophosphite	Gr. 1/3
Manganese Hypophosphite	Gr. 1/8	Iron Pyrophosphate	Gr. 1/8
Potassium Hypophosphite	Gr. 1/8	Quinine Sulphate	Gr. 1/20
Sodium Hypophosphite	Gr. 1/8		

Prescribed by the members of the Medical Profession and sold in many countries for more than 60 years.

1. Produces bitter and therefore tonic effects upon the alimentary canal.
2. Improves muscular tone and nutrition.
3. Provides limited respiratory and vasomotor stimulation.

Samples on Request

FELLOWS MEDICAL MANUFACTURING COMPANY, INC.
26 Christopher Street, New York City

and any other obvious bleeding vessels are similarly treated. A number 18 Harris catheter is passed along the urethra into the prostatic cavity and guided into the bladder. The defect in the false capsule is closed with a continuous catgut suture. The incision in the true capsule is closed with interrupted sutures. The packs are removed from the lateral recesses, the field of operation is swabbed dry and sprayed with sulphanilamide powder. The wound is closed, a small drain being left down to the suture line in the true capsule. Bilateral vasectomy is then performed. The catheter is irrigated with a solution of flavine to free it of any blood clot that may have collected during its passage through the prostatic bed. Four ounces of fluid are left in the bladder and the catheter is spigoted. The spigot is soon released and the tubing is placed in a Winchester bottle by the bedside. Only in an exceptional case has any post-operative syringing of the catheter been necessary. The catheter is removed on the sixth or seventh day; the patient is usually ready to leave hospital on the fourteenth day.

Millin's twenty operations have been performed for the following conditions: fibrous gland with sclerotic bladder neck, two cases; calculous prostate, one; pure lateral lobe hypertrophy, two; generalized hypertrophy, thirteen; generalized hypertrophy associated with prostatic abscess, one; post-prostatectomy scarring of the prostatic urethra, one case. Millin also sets out the following "features" of the operation: (i) It is an extravesical procedure, thus avoiding suprapubic bladder drainage with its risk of slow-closing or persistent fistulæ. (ii) It is applicable to all types of prostatic obstruction. (iii) It is relatively short and shock-free. (iv) It appears to be anatomically sound, no important organs being interfered with or endangered. (v) The mortality is singularly low. No deaths have occurred in the first twenty cases. (vi) The post-operative course is easy for patient and attendant staff. (vii) The whole of the obstructing tissue is removed; so the risk of recurrent obstruction is obviated. (viii) Post-operative stay in hospital seldom exceeds two weeks.

There are some interesting points about Millin's article. The most important obviously is the retropubic extravesical approach. It seems probable from the article that no direct communication is established with the bladder. It would be possible in many instances through an incision in the capsule to enucleate adenomatous tumours growing in the prostate without destruction of the urethra and without damage to the trigonal mucosa. The ejaculatory ducts opening into the prostatic section of the urethra would be torn across, and if the prostatic portion of the urethra was otherwise undamaged after the operation the openings of the ejaculatory ducts would be a potential danger. Millin does not state categorically that the urethra remains intact (except for the damage to the ejaculatory ducts close to the urethra). He does, in discussing reactionary hæmorrhage, refer to a cavity resulting from operation, "closed below by the external sphincter, above by the undamaged internal sphincter, and anteriorly by a firmly sutured incision". The fact that at the end of the operation the catheter has to be guided into the bladder from the prostatic cavity would suggest that the urethra was damaged. Millin also states that in three cases suprapubic leaking of urine occurred owing to faulty catheter fixation. As a matter of fact Millin's subject matter is so important that detail on some of the finer points—a fuller communication—would be welcomed. Another question that must be raised is that of hæmorrhage. Millin seems to have had no trouble with reactionary hæmorrhage, but in two instances secondary hæmorrhage was experienced. No mention is made of sepsis in the cave of Retzius. The risk of such an occurrence will arise at once in the minds of all urological surgeons. The use of sulphanilamide powder, as described by Millin, is, of course, a safeguard, but not an absolute safeguard.

Two points should be noted in regard to Millin's results. First of all he states that it is important that the twenty cases reported by him are a continuous series, with one exception. In this instance the patient suffered from an advanced benign obstruction and had a blood urea content of over 200 milligrammes per hundred millilitres in spite of long-continued catheter drainage; a stab suprapubic cystostomy operation was performed. Millin thus does not adhere solely to his new operation. Again the report states that there were no deaths among a series of twenty patients who were operated on. This is all very well, but there was one case, not included in the series, in which operation was performed "rather to test the safety of the procedure". Presumably in this instance the patient was operated on before any of the twenty with whom the report is concerned. He was a man, aged eighty-four years, who suffered from severe auricular fibrillation, advanced myocardial degeneration, poor renal function and complete urinary retention. Treatment with an indwelling catheter for several weeks had not improved his condition. A large prostate was enucleated successfully by Millin's method, but the patient died from his cardiac condition three and a half weeks later. In regard to this man many will hold, and with considerable justification, that he should not have been excluded from the series; others will hold that in view of his advanced pathological condition, he should not have been operated on at all. As this case was a test case, and Millin proceeded with his series, he cannot have regarded operation as having had anything to do with the patient's death.

Let us now turn to the commendations of *The Lancet*. We read first of all that in this year of 1945, "eighty years after the birth of surgical craftmanship, and in the surgery of the prostate, a branch of operative surgery commoner, more important, more closely studied, and more widely pursued than most, T. J. Millin has discovered a method that is not only quite new, but also simpler, safer, and better than those now in use". Again it is stated that Millin's new operation "seems to avoid the dangers and discomforts of the transvesical, the disasters of the perineal, and the sequelæ of the perurethral operations, and bids fair to supplant them all". One or two of the statements that precede these conclusions should be questioned. The suprapubic operation as generally practised today does, we agree, carry with it certain risks, and it certainly has a considerable mortality in the hands of the "occasional urologist". But such persons as occasional urologists should not be allowed to exist; their surgical consciences should deter them. Such opportunists will be just as dangerous with Millin's operation as they are with any other type of prostatic operation. We read that the Harris operation is an improvement in theory, but that the number of modifications that have been made, and the poor opinion in which they are held by those who have the care of patients afterwards, are evidence of its imperfections. The truth about the Harris operation is that its success is dependent on the meticulous care with which the surgeon follows every detail as described by Harris himself, not the details of any modification. The Harris procedure is the only suprapubic prostatectomy so far devised in which an attempt is made to reform the prostatic urethra—the part of his operation which Harris called "retrigonization". The peculiar arrangement of the sutures in this operation also allows the surgeon to be confident that hæmostasis has been secured. We read further that perurethral operations sometimes cause severe hæmorrhage and that the clinical picture is marred by chances of recurrence and penile stricture. In due time we shall discover whether Millin's operation, which appears to be a good operation, is really as satisfactory as its protagonists would have us believe and whether it has any sequelæ that will mar the clinical picture. Millin himself would have been more convincing if he had been more critical of his own work and had not appeared to gloss over difficulties and imperfections. In all probability we shall find that eventually Millin's operation will become, not the sole method of so-called prostatectomy, but one of several others which will include the Harris operation and perurethral resection and which will be used according to the indications of the particular case under consideration. In the meantime the world of urology can be full of hope.

Abstracts from Medical Literature.

GYNÆCOLOGY.

Uterine Polypi.

K. Newgard and D. G. Morton (*Western Journal of Surgery, Obstetrics and Gynecology*, August, 1945) discuss polypi of the cervix and of the body of the uterus. They base their study on 228 cases of cervical polypus and 82 cases of endometrial polypus, which occurred at the University of California Hospital between January 1, 1930, and December 31, 1939. Of the patients with cervical polypi, 60·9% were aged between forty and sixty years. Only 99 of the 228 patients had no other pathological condition. Seventy-two patients had no gynæcological complaints at all. The most frequent symptom was hæmorrhage, but the authors point out that 61 of the 76 patients who had profuse hæmorrhage had also some associated pathological condition which would explain the hæmorrhage more readily than the polypus. They believe that it is rare for cervical polypi to cause profuse hæmorrhage. Moreover, additional patients in this group had reached the premenopausal stage, when abnormal hæmorrhage occurs frequently. Other symptoms were vaginal discharge, pruritus, dyspareunia and dysmenorrhœa. Of the 99 patients without some other gynæcological abnormality, 80 had no symptoms directly referable to the cervical polypus. The authors believe that a simple cervical polypus alone rarely gives rise to symptoms, and therefore that if a patient complains of frank hæmorrhage and examination reveals a polypus, care should be taken to exclude other causes for the hæmorrhage. Of the 82 patients with endometrial polypus, 34 were aged between forty-one and fifty years. In 31 instances the polypus was purely an accidental finding, no symptoms being present. The most common symptom was hæmorrhage of an intermittent type. In eight cases a watery, sometimes purulent, discharge was present as well, and in five cases a discharge was present without the hæmorrhage. In the remaining cases dysmenorrhœa or menorrhagia was present, which may or may not have been due to the polypus. Twenty-seven of the patients were in the menopausal stage and had ceased to menstruate. In 58 cases a variety of concomitant pathological conditions was present. Both types of polypus form tumour-like growths which have to be strictly separated from other polypoid masses in the cervix or uterine cavity. Their structures respectively resemble those of the cervical and uterine mucosa. Secondary changes are frequent and involve epithelium and stroma. The most important changes are non-malignant epidermization in cervical polypi and malignancy in endometrial polypi. The authors believe that the too loose employment of the term polypus explains many of the so-called malignant cervical polypi reported in the past. While polypoid carcinoma of the cervix occurs, and while rarely a true polypus may become malignant, these changes are usually evident on clinical examination. A simple cervical mucous polypus may be removed in the surgery, if it is certain that no serious associated abnormality is present and if the patient's symptoms can be explained by the presence of the polypus. The treatment of choice is by excision and cauterization of the base.

Coexisting Tuberculosis and Cancer of the Uterus.

G. Harvey Smith (*The Journal of Obstetrics and Gynæcology of the British Empire*, April, 1945) records a case of tuberculosis and cancer coexisting in the uterus. The patient was aged forty-four years. While she was undergoing an operation for appendicectomy, it was found that the uterus was enlarged and that both ovaries were small and atrophic. No evidence of tuberculosis was found. Progress was uneventful, and the patient was referred for gynæcological examination, which revealed that the uterus was anterior, soft, globular and about the size of a grapefruit, and that the ovaries were not palpable. The patient had for seven months had a yellow vaginal discharge, which was relieved by pessaries given by her doctor. Four months after the cessation of the discharge she was admitted to hospital for investigation; she had had a sudden gush of thick yellow discharge from the vagina, followed by blood-stained fluid. This was preceded and followed by severe abdominal pain. Extreme tenderness was present above the *symphysis pubis*, and a mass was palpable through the anterior fornix. After examination under anæsthesia no further treatment was considered necessary. Three months later the patient was readmitted to hospital with severe abdominal pain, frequency of micturition, and hæmorrhage *per vaginam* of three weeks' duration, the blood now coming in clots. Subtotal hysterectomy was performed and the right adnexa were removed. White nodules were present at the uterine end of both Fallopian tubes, and the ovaries appeared healthy. A growth was found in the posterior uterine wall, protruding into the cavity. The diagnosis of carcinoma of the body of the uterus with metastatic deposits in both Fallopian tubes was made. Microscopic examination of transverse sections of the part of the Fallopian tube first thought to be affected by metastasis, revealed that the nodule was the site of caseating tuberculous salpingitis with well-formed giant-cell systems. No tumour cells were seen, and no evidence of peritoneal involvement was obtained. Histological study of the uterine tumour led to the conclusion that it was an anaplastic adenocarcinoma of the body of the uterus. Tubercle follicles were found in the tumour mass itself and in continuity with the neoplastic process. The tubercles were largely non-caseous and evidently fairly young. Their distribution and development suggested that they were younger than the tumour, and were probably the result of dissemination from the older tubal lesion. There was no evidence to suggest that the tuberculous process had any bearing on the origin of the tumour. The association of the two lesions was thought to be accidental. Attempts to discover tubercle bacilli in the lesions by the Ziehl-Neelsen method were unsuccessful. Neither pulmonary nor renal tuberculous lesions could be found in the patient, and she left hospital in good condition. When the report was written, no further trouble had been experienced.

Extrophy of the Bladder with Procidentia.

S. G. Clayton (*The Journal of Obstetrics and Gynæcology of the British Empire*, April, 1945) reports a case of extrophy of the bladder with procidentia. He states that the condition is rare and presents a difficult problem. The patient was aged thirty-one years and had already "endured much surgery"; the lower part of the abdominal wall was represented only by an attenuated scar. The ureters had been transplanted into the bowel. The pubic rami and labia were widely separated, and the position of the symphysis and *mons Veneris* was occupied by a narrow bridge of skin and fibrous tissue. The perineum was normal. At times the cervix protruded outside the vaginal orifice, and the anterior vaginal wall was everted below this bridge of skin. A cup and stem pessary was used to control the prolapse. Three years previously right renal calculi had been removed by pyelolithotomy; but nephrectomy became necessary seven months prior to the patient's coming under observation. The author states that when he first examined the patient she was complaining of severe discomfort due to the prolapse. Her general condition was good. Her urine could not be examined, as it was discharged rectally, but there was no evidence of renal infection, and excretion pyelography revealed good excretion from a normal left kidney. She could hold her urine in the rectum for two hours. The prolapse was complete; the whole vagina was everted, and severe infection and crusting over the mucosa were present. She could not use her cup and stem pessary or walk or sit in comfort. Her menstrual periods were regular and normal. She welcomed an attempt at surgical cure. The possible operative procedures were limited by the patient's previous surgical adventures. At operation under nitrous oxide, oxygen and ether anæsthesia, the posterior fornix was incised and the pouch of Douglas was found to be obliterated by adhesions. The posterior wall of the uterus was followed by gentle dissection, the distended rectum being pushed backwards and freed from the fundus of the uterus, where denser adhesions were encountered. The Fothergill incision was made down the anterior vaginal wall and around the cervix, and the anterior wall of the uterus was dissected free from the fibrous tissue that occupied the normal place of the bladder. The broad ligaments were defined and clamped and the uterus was removed. The broad ligaments were sewn together, and the usual repair of the anterior wall was performed. In view of the gross local sepsis and of fear for the vitality of the rectal wall from the uterine adhesions, some packing was placed in the posterior fornix, which was not completely sutured but left to granulate. A rectal tube was passed to drain urine from the bowel. Recovery was uneventful, and the patient afterwards married. Some bulging of the anterior wall remained, and this later appeared to be increasing. A modified ball and stem pessary was able to be worn with comfort. The author considers that if the eversion progresses, some type of le Forte procedure will have to be performed, and that the ultimate prognosis depends on the fate of the remaining kidney. A few attacks of pain in the loin and fever suggest some ascending infection.

Extragenital Chorionepithelioma.

L. Resnick (*The Journal of Obstetrics and Gynæcology of the British Empire*, April, 1945) discusses extragenital chorionepithelioma, and reports a case in which chorionepithelioma of the breast occurred during pregnancy. He also presents a review of the literature. The author states that chorionepithelioma has been classified into two main groups: (i) a genital group, which is further subdivided into (*a*) uterine and (*b*) extrauterine varieties, and (ii) an extragenital group, defined as chorionepithelioma manifesting itself in organs of the body remote from, and without microscopic evidence of a similar growth in, the genital tract. In respect of the clinical relationship of the condition to pregnancy, three types may be distinguished: (i) that in which the disease develops during pregnancy—the commonest site appears to be the vagina; (ii) that in which the disease develops after an interval of several months to several years—the majority of cases of both the genital and extragenital varieties fall into this group; (iii) that in which the clinical relationship to pregnancy is obscure—in this group can be included the cases of so-called teratomatous origin. In the sixteen cases so far recorded, the distribution has been as follows: thirteen tumours in the lungs, ten in the liver, eight in the kidneys, seven in the intestines, five in the brain, two in the suprarenals, spleen and thyreoid gland, and one each in the mediastinum, heart, pancreas and breast. Four theories of causation are stated: (i) transportation of the chorionepitheliomatous emboli from a previous chorionepitheliomatous placenta completely expelled during labour; (ii) malignant transformation of transported chorionic emboli from a normal placenta; (iii) complete regression of the uterine tumour with continued growth of the metastases in distant organs; (iv) development from the trophoblast of an extragenital teratoma.

OBSTETRICS.

"Prostigmin" as a Test for Early Pregnancy.

A. A. Corber (*Canadian Medical Association Journal*, July, 1945) advocates the use of "Prostigman" in cases of delayed menstruation. He maintains that this will induce menstrual bleeding in all but a few patients unless pregnancy exists. If the patient is pregnant, no bleeding will occur and no damage will be done. The author summarizes the rationale for this treatment by explaining that "Prostigmin" inhibits cholinesterase, thus enhancing the effect of acetylcholine in producing uterine hyperæmia. When the primary stimulating agents, that is, the œstrogens, are present the injection of "Prostigmin" sets into action the secondary vascular effects. Cases in which the treatment will fail are those in which there is an underlying endocrine disturbance, or else some general debilitating disease or those in which local pelvic disease is present. "Prostigmin" is therefore not only valuable in the treatment of delayed menstruation, but is a useful test for early pregnancy.

The Influence of Stilbœstrol on Lactation.

Henry Fields (*American Journal of Obstetrics and Gynecology*, March, 1945) was stimulated by the differences of opinion concerning the efficacy of stilbœstrol in suppressing lactation to make a study of 250 patients. He particularly wished to compare its effects on mothers with no nipple stimulation and on those whose breasts were emptied either by suckling or pumping during the progress of treatment. In all cases studied he used none of the usual supplementary measures for inhibiting lactation. The mothers were given a normal fluid intake and no undue cathartics, and the breasts were properly supported with no binding. The dosage of stilbœstrol was one milligramme three times daily for five days. Under these conditions, he found a definite suppression of lactation in mothers with no nipple stimulation, in those with associated pumping of the breasts and in those who had previously fully established lactation by a short period of nursing. Furthermore a group treated while nursing their babies showed a definite decrease in milk supply during the administration of stilbœstrol. In this group the milk supply returned to normal after treatment was discontinued. Another point is the ability of women to take *post partum* varying doses of stilbœstrol by mouth with no untoward effects. None of the mothers or infants in the series showed any unusual signs or symptoms. Furthermore it was found that one milligramme of stilbœstrol taken three times daily produced the same degree of milk suppression as twenty milligrammes taken four times daily.

Anæmia in Pregnancy.

John Wolff and Louis R. Limarzi (*The Journal of the American Medical Association*, June, 1945) discuss the blood picture in normal pregnant women and compare it with the findings in anæmic pregnant women. Their studies include both peripheral blood and bone marrow. They agree with other observers in noting a constant decrease in erythrocytes and hæmoglobin value from the third or fourth month of pregnancy. They attribute this to a relative increase of plasma volume rather than to a lack of iron, as the bone marrow picture shows no change in the character of normal erythropoiesis. Some workers are quoted as stating that hæmoglobin, ten grammes, and erythrocytes, 3·36 million per cubic millimetre, are the minimal normal figures during pregnancy. Others give higher values up to 11·3 grammes and 4·0 million respectively. Examples are studied of hypochromic, microcytic and normocytic anæmias which responded well to iron therapy. The bone marrow in these cases showed a normoblastic hyperplasia. The key to iron therapy is the mean corpuscular hæmoglobin concentration. When this is below normal it proves the existence of a true hypochromic anæmia rather than a so-called physiological anæmia. The third type of pregnancy anæmia is the megaloblastic or pernicious anæmia of pregnancy. This differs from the true pernicious anæmia in the lack of associated neurological symptoms, smooth tongue and splenomegaly. Also no achlorhydria is found. The blood picture here is that of a macrocytic, hyperchromic or hypochromic anæmia, and it is usually of a more severe character than the other types. The bone marrow shows a megaloblastic type of erythropoiesis and some abnormal granulopoiesis. This anæmia seems to be found always in the latter months of pregnancy. It requires large and frequent intramuscular doses of potent liver extract and several blood transfusions to bring about a satisfactory recovery phase. The peripheral blood and bone marrow recover completely and permanently in about five months after delivery. The infants have normal blood and bone marrow, as also do other children of the mother. In conclusion, the authors state that the most accurate criterion for the diagnosis and treatment of the true anæmia of pregnancy is the study of the bone marrow. The changes in the peripheral blood are of a secondary nature and may be misleading.

Uterine Defence Mechanism against Infection.

J. R. Goodall (*American Journal of Obstetrics and Gynecology*, April, 1945) has studied the mechanism by which infection is avoided in the uterus after abortion or confinement. He considers that the uterus has a special defence mechanism, some aspects of which are known—desquamation, exfoliation, local lymphocytosis, development of mesenchymal cells in the parametrial tissues during pregnancy (Hofbauer's cells), and closure of the uterine cavity by blood clot. There are probably others of a biochemical nature not yet known or understood. The author discusses the rôle of each of these factors, and concludes that they together form a strong barrier against invasion by pathogenic organisms. The sealing of the cavity by blood clot and the growth of a new mucosa under the bridgework seal the open wound. When the cavity is completely closed off, the major part of the lochia comes from the lower uterine segment and from the serum squeezed out of the uterine cavity during the early days *post partum* and from the disintegration of the uterine fibrin after it has fully discharged its function.

The Transmission of Penicillin through the Placenta.

A. M. Hutter and J. Parkes (*American Journal of Obstetrics and Gynecology*, May, 1945) have investigated the blood level of penicillin in the mother and the fœtus when the drug is given to the former and report their findings. It was found that 100,000 units of penicillin injected intramuscularly into the pregnant patient at term would produce an adequate bacteriostatic penicillin level in the fœtal circulation. This opens up a rapid method of treatment of syphilis and gonococcal infections; penicillin given during labour should reduce fœtal infection in cases of prolonged labour with ruptured membranes.

Special Article.

RESEARCHES ON "PALUDRINE" (M.4888) IN AUSTRALIA.

From the Land Headquarters Medical Research Unit, Cairns.[1]

ANY army possessing an antimalarial drug which would completely prevent malaria from developing in troops operating in highly malarious areas would have a tremendous advantage over the enemy. For this reason, the results of researches on antimalarial drugs in general had to be secret, especially following the entry of Japan into the war. For security reasons newly discovered chemical compounds were referred to only by code numbers, and the great majority of research workers knew little or nothing about the chemical formulæ of the antimalarial drugs they were investigating.

HISTORY OF THE INVESTIGATIONS.

From 1942 onwards in England research chemists and biologists in the laboratories of Imperial Chemical Industries succeeded in synthesizing a unique series of new antimalarial compounds of increasing potency. The earlier drugs in the series were interesting, but not good enough to justify extensive trial on human beings. In 1944, however, Mr. F. M. Rose, working in collaboration with Mr. F. H. S. Curd, synthesized two new drugs which Dr. D. G. Davey, who was responsible for all the biological testing on bird malaria in this research, regarded as most promising. He found not only that these two drugs destroyed malaria parasites in the blood of birds, but that in the species of bird malaria tested (*Plasmodium gallinaceum*) they actually prevented the infection from developing. In other words, these drugs were acting as true causal prophylactics. Early in 1945, Dr. Davey and his team had found one of these drugs (M.4888) definitely superior to the other (M.4318), inasmuch as M.4888 prevented malaria from developing in several different species of malaria affecting birds—*Plasmodium gallinaceum, Plasmodium relictum, Plasmodium cathemerium* and probably *Plasmodium lophuræ* as well. This lead to the hope that it might prove to be a causal prophylactic in human malaria also.

Unfortunately, as experience in the United States of America, Great Britain and Australia has shown during the present war, it does not necessarily follow that a drug which will prevent avian species of malaria parasites from developing in birds, will prevent human species of malaria parasites from producing malaria in man.

This is well illustrated by reference to sulphamerazine, which was found in 1942 by biologists in the United States of America to be a true causal prophylactic in *Plasmodium gallinaceum* infection in chicks. Field reports on the prophylactic value of similar sulphonamides in troops in West Africa, where *Plasmodium falciparum* infection predominates, appeared to support a similar action in human malaria. Subsequent critical investigations on experimentally infected volunteers at Cairns in 1943 proved that: (i) Sulphamerazine and the allied sulphonamides, even in malignant tertian malaria, were not true causal prophylactics in man, but acted as schizonticides. (ii) While they suppressed and cured some 85% of malignant tertian infections when given in a dosage of 1·0 gramme daily, they completely failed to cure and in most instances completely failed to suppress *Plasmodium vivax* infections. As both species of malaria are prevalent here, sulphamerazine was obviously unsuited for the South-West Pacific Area.

The Medical Research Council, which controlled all malaria research in Great Britain, arranged early in 1945 for clinical trials on malaria patients and studies on the pharmacology of "Paludrine" to be carried out at the Liverpool School of Tropical Medicine in England and for experiments on human volunteers to be undertaken by the Land Headquarters Medical Research Unit at Cairns, especially from the viewpoint of causal prophylaxis and action on parasitic strains found in the South-West Pacific.

The British work on "Paludrine" was reviewed in the *British Medical Journal* on November 10, 1945, at page 653, but owing to a sudden decision to release information on M.4888 and rename the drug "Paludrine", it was not possible in the time available to include an up-to-date account of the Australian researches. In 1944 the name "Paludrine" had been given by Imperial Chemical Industries to an early and less effective antimalarial compound of the same series (M.3349). This led to a certain amount of confusion, for when the British Press and radio announced the discovery of "Paludrine" and stated that this drug was being extensively investigated in Australia an official denial was made from headquarters of the Australian Military Forces. At that time no notification had reached headquarters of the Australian Military Forces that the security silence had been lifted on M.4888 or that it had been renamed "Paludrine".

RESEARCHES AT LAND HEADQUARTERS MEDICAL RESEARCH UNIT, CAIRNS.

Approximately 200 volunteers have been exposed to experimental malaria infection in connexion with this research, and the drug has been or is being used for clinical trials on several hundred patients suffering from malaria contracted in New Guinea or elsewhere in the South-West Pacific Area.

Two species of malaria commonly affect troops in the tropics, the dangerous malignant tertian malaria caused by *Plasmodium falciparum*, which rapidly kills if not treated, and the far less dangerous but more troublesome relapsing type of benign tertian malaria caused by *Plasmodium vivax*. A drug which prevents or cures one of these species may fail to do so with the other; in consequence each species has to be investigated separately.

Four problems concerning "Paludrine" have been and are being critically investigated at Cairns, and until these have been answered the full value of this drug cannot be finally assessed. These problems are: (i) Is "Paludrine" a true causal prophylactic? (ii) Is it an efficient schizonticide and does it produce clinical cure? (iii) Will it result in radical cure? (iv) Is it gametocidal or will it prevent anopheline mosquitoes, feeding on gametocyte carriers taking the drug, from becoming infective?

Is "Paludrine" a Causal Prophylactic?

Is "Paludrine" a causal prophylactic? In other words, does this drug prevent the parasites of malignant and benign tertian malaria from developing in man by acting on the sporozoites or exo-erythrocytic or e.e. forms.

Malignant Tertian Malaria.

The first important result obtained at Cairns has been to show that in malignant tertian malaria "Paludrine" destroys the parasites inoculated by the infected mosquito at an early stage of their development before they regain access to the circulating blood.

So potent is this drug that if 1·0 gramme of "Paludrine" is swallowed three hours before the volunteer is bitten by ten heavily infected anopheline mosquitoes, malignant tertian malaria does not occur. Similarly a single dose of 0·1 gramme, given on the second, third, fourth or fifth day following infection, prevents malignant tertian malaria developing. This simple type of experiment definitely proves that "Paludrine" prevents malaria and is a true causal prophylactic in *Plasmodium falciparum* infections. No matter how much quinine or "Atebrin" is given in identical circumstances, malignant tertian malaria invariably follows. The only drug with a comparable action is "Plasmoquine", and to get this result it has to be used in toxic dosage.

In the field the customary military procedure to suppress malaria is to give one tablet of a drug every day. It has been found at Cairns that no matter how many mosquitoes (*Anopheles punctulatus punctulatus*) infected with *Plasmodium falciparum* bit volunteers, the volunteers failed to develop the slightest evidence of malaria, provided they were taking one tablet (0·1 gramme or 1·5 grains) of "Paludrine" every day. During their field tests these volunteers were subjected to repeated malarial infections, and to long marches in hilly country in a tropical climate—thirty miles in one day, eighty-nine miles in three days, and finally seventy-two miles in thirty-six hours. They also voluntarily subjected themselves to extreme cold in the freezing chamber of the local meat works, staying in for one hour at −10° C. Despite these and other stresses, they remained perfectly fit. Fever was entirely absent, the spleen never enlarged, and malaria parasites could not be demonstrated in the blood even after the most searching microscopic examinations lasting one hour or longer.

---

[1] Director, Brigadier N. Hamilton Fairley; Commanding Officer and Senior Physician, Lieutenant-Colonel C. R. Bickerton Blackburn; Physician, Captain R. H. Black; Pathologists, Major T. S. Gregory, Major J. I. Tonge; Assistant Pathologists, Lieutenant K. S. Pope, Lieutenant S. R. Dunn, Lieutenant M. S. A. Swan and Lieutenant T. A. F. Akhurst; Entomologist, Major M. J. Mackerras; Assistant Entomologists, Lieutenant T. H. Lemerle and Lieutenant Q. N. Ercole.

As it is feasible to examine only a very small quantity of blood (1·0 millilitre) under the microscope, the possibility remains that parasites may be there in numbers too scanty to be seen, that is, in a submicroscopic density. To exclude this possible fallacy 200 millilitres of blood (that is, 200,000 times as much as it is practicable to examine microscopically) were taken from these volunteers and injected into other volunteers to ascertain if the recipients got malaria. None did. With the Julian Smith rotary blood transfusion pump, it was possible to prove that malaria parasites were not present in the circulating blood of the original volunteers, even though they had been bitten by many infected mosquitoes known to be carrying sporozoites of *Plasmodium falciparum* in their salivary glands.

"Atebrin"—the drug which has enabled us to maintain our armed forces fighting against the Japanese in highly malarious areas in the Pacific and East Asia Commands—does not act in this way. If an individual taking "Atebrin" every day is bitten by infected mosquitoes, parasites appear in submicroscopic numbers in the blood from the seventh day onward, but if "Atebrin" is present in sufficient concentration, the parasites are destroyed within the next three to five days and cure of the malignant tertian malaria infection results. When taken in a dosage of one tablet (0·1 gramme) every day, the difference between "Paludrine" and "Atebrin" is that with "Atebrin" the asexual parasites are destroyed after reaching the circulating blood, whereas the exo-erythrocytic parasites (e.e. forms) are destroyed by "Paludrine" before they can produce erythrocytic parasites.

Benign Tertian Malaria.

If volunteers taking one tablet of "Paludrine" (0·1 gramme) daily are bitten by mosquitoes infected with *Plasmodium vivax,* they fail to develop symptoms of malaria or show malaria parasites in the blood while "Paludrine" is being taken. Some time after they cease to take the drug, however, parasites may appear and a frank malarial attack may develop.

Somewhat similar findings occur in volunteers exposed to infection while taking one tablet of "Atebrin" every day, except that though generally parasites cannot be found in the blood with the microscope, they can be demonstrated invariably by injecting into another volunteer 200 millilitres of blood collected nine days after exposure to infection. If the infected volunteer is taking "Atebrin", the recipient of his blood goes down with an attack of benign tertian malaria, but if he is taking "Paludrine", malaria does not develop.

Though "Paludrine" inhibits the development of benign tertian malaria parasites in the host, prevents their appearance in the blood and suppresses fever while the drug is being taken, it acts only as a partial causal prophylactic in *Plasmodium vivax* infections and an attack is liable to develop once the drug is stopped.

The reason for this evidently lies in the persistence of exo-erythrocytic parasites (e.e. forms) which have survived, despite the fact that their cyclic development had been inhibited throughout the period of "Paludrine" administration.

Is "Paludrine" a Satisfactory Schizonticide?

"Paludrine" has proved a satisfactory schizonticide for the control of the clinical attack of malaria in both malignant tertian and benign tertian infections. Researches at Cairns indicate that it inhibits nuclear division in the early schizont stage, causes degeneration of asexual parasites before developing into mature schizonts and gives clinical results which are comparable but in no way superior to those obtained with appropriate doses of quinine or "Atebrin". In *Plasmodium falciparum* infections its action in inhibiting nuclear division has been demonstrated by Captain R. H. Black by cultivating the parasites *in vitro* in a blood glucose serum medium containing the drug.

One remarkable feature of "Paludrine" as a schizonticide is the smallness of the dose required to control an attack of malaria fever. One tablet (0·1 gramme) has proved sufficient to end the attack and bring the temperature to normal in both malignant tertian and benign tertian infections. Nothing approaching this can be achieved by either quinine or "Atebrin", while "Plasmoquine" is quite inferior as a schizonticide and even in toxic dosage fails in *Plasmodium falciparum* infections.

Does "Paludrine" Produce Radical Cure?

Does "Paludrine" produce radical cure? In other words, does "Paludrine" produce a permanent cure so that an infected individual who returns to a non-malarious area and undergoes a course of treatment will have no further attacks?

At Cairns, out of 65 patients suffering from malignant tertian malaria treated, 64 have been proved to be cured. The course of treatment used was short, consisting of three tablets daily for ten days. This is a remarkable result and superior to what could be achieved with either quinine or "Atebrin" in the same period.

It is too early yet to assess the ultimate cure rate in benign tertian malaria, as sufficient time has not elapsed to be sure that delayed relapses will not follow.

In one group of 31 volunteers with primary benign tertian malaria, however, only five out of thirty-one have suffered a relapse to date. Ten tablets (1·0 gramme) were given every day for fourteen days to these volunteers, and despite the large dosage little inconvenience resulted. Even, however, if "Paludrine" fails to cure most individuals with relapsing benign tertian malaria, the results at Cairns suggest that the mere taking of one or two tablets each week would give complete freedom from attacks.

Recently for the first time a relatively "Atebrin"-resistant strain of *Plasmodium falciparum* has been studied at Cairns which requires 0·2 gramme of "Atebrin" daily to suppress symptoms in experimentally infected volunteers and even then may fail to effect a cure. This strain shows no enhanced resistance to quinine, sulphamerazine, "Resochin" (S.N.7618) or "Paludrine". Indeed its sensitiveness to "Paludrine" was remarkable, for it was found in repeatedly infected volunteers that one-quarter of a tablet (0·025 gramme) daily was a complete causal prophylactic. In other words one-eighth of the dose of "Paludrine" was completely effective, yet in equivalent dosage "Paludrine" is much less toxic than "Atebrin".

Another experiment on 600 cases of relapsing benign tertian malaria is in progress at 113 (Concord) Military Hospital, 115 (Heidelberg) Military Hospital and 112 (Brisbane) Military Hospital, and is designed to ascertain whether the combination of "Paludrine" (0·3 gramme daily) with "Plasmoquine" base (0·03 gramme daily) for ten days is superior to quinine (30 grains) and "Plasmoquine" base (0·03 gramme daily) for ten days. There is evidence that both "Paludrine" and "Plasmoquine" act on the persistent (secondary) e.e. forms of *Plasmodium vivax,* and it is possible that the combination of the two drugs may produce a higher proportion of radical cures than any other combination of antimalarial drugs.

The Effect of "Paludrine" on Gametocytes.

Plasmodium Falciparum.

The question of the effect of "Paludrine" on the gametocytes of *Plasmodium falciparum* has been investigated by Major M. J. Mackerras and Lieutenant Q. N. Ercole at Cairns.

Gametocyte production is apparently not checked by "Paludrine", since after a full course (0·3 gramme daily for ten or fourteen days) patients exhibit gametocyte waves, the height and duration of which fall within normal limits.

If the drug (either in doses of 0·1 or 0·3 gramme daily) was given when gametocytes were already present, they persisted in the circulation morphologically unchanged for a normal period. However, if mosquitoes were fed on a patient taking the drug no salivary gland infection was ever recorded.

Complete sterilization of the infection occurred in mosquitoes fed on a gametocyte carrier one hour after the first dose of 0·1 gramme of "Paludrine" was taken.

The drug did not produce any irreversible change in the gametocyte, but killed the protozoon only after it had begun development in the mosquito. This was shown by the fact that, when gametocytes were sufficiently numerous and persisted after the cessation of therapy, they might recover completely when the drug was eliminated.

After the initial rise gametocytes tend to decrease gradually in numbers and infectivity, irrespective of therapy (except, of course, "Plasmoquine" therapy), and one may expect infections to get lighter if anything from day to day. After cessation of "Paludrine", however, infections of increasing heaviness are obtained.

When mosquitoes were fed on carriers two, four, five and six days after the cessation of therapy (0·3 gramme daily for ten days), no infection was recorded. On the seventh, eighth and tenth days oocysts formed, but failed to grow. On the twelfth, thirteenth and fourteenth days oocysts developed normally and sporozoites invaded the salivary glands. The end of the infection in mosquitoes fed on the tenth day resembled that seen on the first day of therapy, that is, death and shrivelling of the young oocyst. Apparently traces of the drug sufficient to kill the organism were still present on the tenth day, but had disappeared on the twelfth day after the cessation of therapy.

There is evidence that the effects of a single dose of 0·1 gramme cease by the fourth day. Gametocytes taken up by mosquitoes four or more days after the administration of 0·1 gramme proved capable of completing their development.

Plasmodium Vivax.

It appears that "Paludrine" has no effect on the numbers or morphology of *Plasmodium vivax* gametocytes. In wet preparations made from one to five days after the beginning of therapy many gametocytes appeared quite normal with pigment in characteristically rapid motion. Exflagellation with the formation of vigorous microgametes was observed in one case on the fifth day of therapy (0·3 gramme daily) and in another on the fourth day of increased dosage (1·0 gramme daily).

When anophelines (*Anopheles punctulatus punctulatus*) were fed on gametocyte carriers who had received a single dose of 0·15 gramme or 0·2 gramme, exflagellation, fertilization and vermicule formation occurred normally. The vermicules penetrated the gut wall and became encysted. With one exception development in every batch of mosquitoes was arrested at this point, and two weeks after feeding when the cysts should have been mature, all that could be found in the gut wall were small shrunken cysts containing a few clumps of pigment. In the exception referred to mosquitoes were fed on the carrier four and a half hours after his first dose. In about 50% of those dissected some cysts had grown a little. The two largest seen measured 35µ by 25µ and 22µ by 20µ (that is, approximately half-grown). No further growth took place and the cysts ultimately became shrunken and some became chitinized.

In mosquitoes fed on the second day of therapy (0·3 gramme daily) development occurred normally up to the vermicule stage, but penetration of the gut wall was not observed.

Exflagellation and fertilization were observed in three cases on the third day and in one case on the fourth day of therapy, but vermicules were not detected and no cysts appeared in the gut wall.

Trophozoites had usually disappeared from the blood by the third or fourth day and gametocytes by the seventh or eighth day of therapy.

SUMMARY.

Though "Paludrine" has no demonstrable effect on the gametocyte and is not a gametocidal drug in the accepted meaning of the term, complete sterilization of the infection occurs in mosquitoes fed on a gametocyte carrier as early as one hour after 0·1 gramme of the drug is taken. This sterilization effect persists for a variable number of days after medication ceases and depends on the dosage administered. From a practical point of view it can be stated that a ten-day course of "Paludrine" (0·3 gramme daily) is quite effective in controlling the infectivity of the gametocytes in benign tertian malaria, and that if this treatment is prolonged for three weeks in malignant tertian malaria a similar result will be achieved.

The standard clinical course likely to be adopted in the Australian army is one tablet (0·1 gramme) thrice daily after food for three weeks, or one tablet of "Paludrine" (0·1 gramme) and one tablet of "Plasmoquine" (0·01 gramme) thrice daily for ten days.

If *Plasmodium vivax* relapses still occur, the individual will be advised to take one tablet of "Paludrine" (0·1 gramme) twice weekly indefinitely or until cure has probably been attained.

For suppressive purposes in the field one tablet (0·1 gramme) twice a week, that is, at intervals of three or four days, should give complete protection. The Cairns experiments indicate that in this dosage the drug acts as a true causal prophylactic in malignant tertian malaria and completely suppresses benign tertian malaria. Whether, in this dosage over long periods of time, it will cure benign tertian malaria by its action in preventing nuclear division in e.e. forms remains to be determined.

CONCLUSIONS FROM THE CAIRNS EXPERIMENTS ON "PALUDRINE".

The results on experimentally infected volunteers at Cairns and clinical trials with "Paludrine" in various Australian military hospitals have confirmed and extended in human malaria the results obtained by Dr. D. G. Davey and his team in bird malaria.

1. "Paludrine" is superior to all known antimalarial drugs inasmuch as in non-toxic dosage it is a true causal prophylactic in malignant tertian malaria and a partial causal prophylactic in benign tertian malaria. The only other drug which has a similar action is "Plasmoquine"; but this drug has to be given in a dosage which is too dangerous for routine use in man.

2. "Paludrine" in therapeutic dosage controls malaria fever and terminates the clinical attack. It produces radical cure in malignant tertian malaria. The percentage of radical cures in benign tertian malaria is not yet known, but the Cairns results suggest that when individuals are not cured, the administration of 0·1 gramme twice weekly indefinitely would prevent relapses until cure was attained.

3. Though "Paludrine" is not gametocidal in the accepted meaning of the term, sterilization of the infection occurs in mosquitoes fed on a gametocyte carrier as early as one hour after the drug is taken. This sterilization effect persists while the drug is being taken and for a variable period after administration of the drug ceases, depending on the dosage adopted. Its action in this respect is superior to that of quinine or "Atebrin", for gametocyte carriers may continue to infect mosquitoes while these drugs are being administered. On the other hand, as a true gametocide "Paludrine" is inferior to "Plasmoquine".

4. The difference between the effective therapeutic dose and the toxic dose is very considerable. Taking this into consideration, "Paludrine" is undoubtedly the most potent antimalarial drug known. Its discovery is a triumph for British chemotherapy.

British Medical Association News.

NOTICE.

The General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed or will resume practice as from the dates mentioned:

Dr. H. R. Love, Wickham House, Wickham Terrace, Brisbane (February 1, 1946).
Dr. R. G. Quinn, Lutwyche Road, Windsor, Brisbane (January 8, 1946).
Dr. B. R. Morey, 56, Macquarie Street, Parramatta, New South Wales.
Dr. W. C. B. Harvey, 135, Macquarie Street, Sydney (January 2, 1946).
Dr. G. S. Flynn, 135, Macquarie Street, Sydney (February 1, 1946).
Dr. Henry Stephens, 85, Spring Street, Melbourne (December 17, 1945).
Dr. H. M. Fisher, 177, North Terrace, Adelaide (March 1, 1946).
Dr. W. A. Dibden, 172, North Terrace, Adelaide (February 18, 1946).
Dr. Mark Bonnin, 178, North Terrace, Adelaide, South Australia.

Special Correspondence.

CANADA LETTER.

By Our Special Correspondent.

The end of the year 1945 has brought a general stocktaking in Canadian medicine. It may be fair to say that no single year in our history has witnessed such an orientation of public discussion in the subjects of medical care, prepayment plans of health insurance, and medical education. The remarkable work of the National Research Council has appealed strongly to the imagination of a people now very research conscious due to Canada's connexion with the atomic bomb.

One of the year's major accomplishments has been the setting up and staffing of a Ministry of National Health and Welfare under a capable and enthusiastic young minister, the Honourable Brooke Claxton. The former Director-General of Medical Services for the Army, General Brock Chisholm, has been made the Deputy Minister in charge of health, while Dr. George Davidson, formerly Director of Social Welfare for the Province of British Columbia, has been made Deputy Minister in charge of welfare.

Amongst the subjects occupying the new ministry's attention is that of old-age pensions. Since it is estimated that within thirty years one person in fifteen in Canada will be over the age of seventy, there is a keen concern at Ottawa in the drafting of sound fiscal policy so that this burden may be shouldered by the national government without delay.

An innovation in public health and physical fitness has been introduced in Saskatchewan, where the Director of Physical Fitness for the province, Dr. J. B. Kirkpatrick, an air force veteran, has developed a programme of physical fitness in the jails of the province. The psychiatric value of the programme is becoming strikingly manifest.

Health and welfare services together with education in the Province of British Columbia now absorb approximately one-half of the annual budget of that rapidly expanding western area. Though its university is the youngest in Canada, it now has 7,000 students, and with the opening of a medical school in the near future will be Canada's second in size. While the province has had a most vigilant venereal disease administration, the mass movement of population during and since the war has made the control of disease most difficult. In fact, the first six months of 1945 showed an increase of 100% over the same period in 1944 in primary and secondary syphilis. The treatment of such cases has posed a problem for the authorities directing the discharge of personnel from the forces. Fever therapy combined with massive dosage of penicillin offers a solution only in so far as the treatment is continuous. The restlessness engendered in the population with the end of hostilities has added to the difficulty of ensuring completion of treatment. An additional distraction has been added by the unfortunate conception popularized by the *Reader's Digest* of the efficacy of a "one-day treatment for syphilis". Unfortunately the lay public of Canada and the United States is keener on pseudo-science than medical accuracy at the moment, and it will indeed take time to counteract the effect of the *Reader's Digest* in medicine and in other fields.

The Montreal Neurological Society closed a year of excellent meetings with a memorial to the late Professor del Rio-Hortega, who died in June in the Argentine as an exile from Spain. His contributions to neuropathology were reviewed by Dr. Wilder Penfield, Professor Pierre Masson, and del Rio-Hortega's first pupil, Dr. Miguel Prados. A symposium on the care of paraplegic veterans was also held, at which social workers and neurosurgeons contributed. Canada has a large programme for the rehabilitation of these men from the armed forces.

The future methods for the prepayment of medical care are being worked out by an economic commission at Ottawa representing Federal and Provincial Governments.

Correspondence.

TUBERCULOSIS PATIENTS AND HOSPITALS.

Sir: In your issue of January 5, 1946, Dr. D. B. Pitt inquires if any provision is made in Melbourne for an ambulant pneumothorax clinic.

With the concurrence of Dr. J. Bell Ferguson, State Director of Tuberculosis, it has been decided to commence such a clinic at the Central Hospital, Melbourne. Five male and five female beds will be retained for cases requiring artificial pneumothorax. Inductions will be carried out whilst the patients are in hospital, and so soon as the collapse is stabilized, the patient discharged to home, the refills being maintained at the Refill Clinic. Patients admitted to these beds will be short-term in-patients, and if artificial pneumothorax is not feasible, or cannot be satisfactorily maintained, there can be no undertaking to retain the patient.

Admissions will, as at present, be arranged by the Tuberculosis Bureau, but admission may be expedited by, at the same time, notifying the Medical Director, Central Hospital, of suitable cases for ambulant pneumothorax therapy.

It must be appreciated that this arrangement is an emergency measure, designed solely to relieve the acute position in tuberculosis accommodation at present existing in Victoria.

Yours, etc.,
Alan H. Penington, M.D.

Central Hospital,
172, Lonsdale Street,
Melbourne, C.1.
January 30, 1946.

THE INTERVERTEBRAL DISK.

Sir: In 1931 the Medical Research Council of Great Britain published their Special Report No. 161 with the title: "The Intervertebral Disks: Observations on their Normal and Morbid Anatomy in Relation to Certain Spinal Deformities." The observations were made by Dr. O. A. Beadle, Radcliff Travelling Fellow, who worked under Dr. Schmorl in Dresden.

Dr. Schmorl started in 1925 to remove every spine for examination as a post-mortem routine. In five years he had removed and examined 7,000 spines. His museum contained 600 complete spines and many hundred smaller preparations of parts of spines. Hundreds more spines were ready for mounting in the museum when the necessary space was available.

As it is not permissible in English-speaking countries to remove the whole spine from the body, it is very unlikely that any more exhaustive and finished survey of the intervertebral disk will be made for many years to come. It is also very probable that the events of the past six years have caused a wide dispersion of Dr. Schmorl's unique collection.

Many articles on the role of the intervertebral disk in producing low back pain have been written during the past few years. To the best of my knowledge in only one instance—an article by A. C. Mooney in the *British Journal of Radiology* of May, 1945—has Beadle's monumental monograph been mentioned.

It is felt that were the existence of Beadle's monograph more generally known, many of the problems connected with lesions of the disks could be more readily clarified, and statements such as that made by one of your contributors in the journal of January 12, 1946, that there was a likelihood of regeneration of the *nucleus pulposus* unless the cavity was freely curetted would not be made.

Yours, etc.,
W. H. Godby.

179b, St. George's Terrace,
Perth,
February 4, 1946.

Sir: At a meeting of the New South Wales Branch of the British Medical Association held on July 26, 1945, Dr. Douglas Miller is reported as having said (The Medical Journal of Australia, January 12, 1946, page 58): "Localization by observation of pain, numbness and of objective signs referred to a dermatome might be deceptive." In his letter of August 31 (The Medical Journal of Australia, September 15, 1945, page 351) Dr. Miller stated: "No one can doubt the good effects of conservative surgery on the intractable sciatica . . . where localization can be accurate . . ."

Would Dr. Miller please inform me what happened during this period of 36 days to make him change his opinion or is his use of the word "accurate" not so accurate?

Yours, etc.,
Marion A. Radcliffe-Taylor.

Perth,
Western Australia,
January 30, 1946.

THE SURGICAL AND APPLIED ANATOMY OF THE INGUINAL REGION.

Sir: Lieutenant-Colonel Harley Turnbull and others interested who may not have had access to recent literature may be interested in references to the anatomy and surgery of the inguinal regions.

The references to the former concern the accurate anatomy of the inguinal region based on painstaking dissection by

Barry J. Anson and Chester McVay. The references are: Barry J. Anson and Chester B. McVay: "Inguinal Hernia. I. The Anatomy of the Region", *Surgery, Gynecology and Obstetrics*, Volume LXVI, February, 1938, page 186; "The Anatomy of the Inguinal and Hypogastric Regions of the Abdominal Wall", *Anatomical Record*, Volume LXX, January, 1938, page 211.

In regard to the surgery of hernia, there is an excellent article by Lieutenant-Colonel W. J. M. Brandon to be found in *The Lancet*, February 10, 1945, page 167. Lieutenant-Colonel Brandon has pointed out that the frequency of recurrence of oblique inguinal hernia is due to one factor alone: "That the true internal ring is over-lapped completely by the lower border of the internal oblique muscle. In consequence, closure of the so-called ring at operation does not occur at the true internal ring, but at a point lower down the cord."

Those who are interested should read the article themselves. One comment concerning the operative treatment by Lieutenant-Colonel Brandon is worth noting, namely: "In this way almost every conceivable type of complication may be dealt with, and almost every conceivable mood of the surgeon satisfied; and at the same time a sufficiently shock-proof method of primary repair can be effected without involving the patient, and particularly the soldier, in yards of *fascia lata* or binding him with fetters of floss silk, and one that may yet save the merchant seaman from becoming a sort of animated ironclad."

Two other useful references to the treatment of direct inguinal hernia are: Leo M. Zimmerman: "Clinical Surgery: Inguinal Hernia: II. The Surgical Treatment of Direct Inguinal Hernia", *Surgery, Gynecology and Obstetrics*, Volume LXVI, February, 1938, page 193. This is based on the work of Anson and McVay. And a second reference on the use of heterogenous fascial grafts is: Jacob Chandy: "The Use of Heterogenous Fascial Grafts in the Radical Operation for Hernia", *Annals of Surgery*, Volume CXXII, November, 1945, page 885.

In conclusion may I draw attention to a very nice piece of applied anatomy in regard to sliding hernia: Roswell K. Brown: "Sliding or Paraperitoneal Hernia of the Pelvic Colon", *Surgery, Gynecology and Obstetrics*, Volume LXXVI, January, 1943, page 91.

Yours, etc.,
E. S. MEYERS.

The University of Queensland Medical School,
Brisbane,
February 5, 1946.

Obituary.

ANDREW ERIC ASPINALL AND ARCHIBALD JOHN ASPINALL.

The late Reverend A. Ashworth Aspinall, for many years principal of the Scots College, Sydney, had five children, four sons and one daughter, all of whom graduated in medicine at the University of Sydney. One of the sons, Robert, lost his life in the war of 1914-1918 while he was serving with the Australian Army Medical Corps. The other three sons served in the same war, and the eldest, Archibald John, always known as Archie, served also in the war that has just ended. Andrew Eric and Archibald John died recently of the same kind of cardiac condition within a few weeks of one another, the former on November 10, 1945, and the latter on December 5, 1945.

Andrew Eric Aspinall graduated in medicine at the University of Sydney in 1915. He had been a student at Sydney Hospital and became a resident medical officer on graduation. He soon went on active service, however, as his three brothers did. He served as regimental medical officer and later as anæsthetist to a surgical team. He was promoted to the rank of major. On his return to civil life, he married and settled in practice at Turramurra. In 1923 he was elected to the staff of the Royal North Shore Hospital of Sydney on the medical side. At the time of his death he was physician to indoor patients. He took an interest in school education and was medical officer to Knox College. In his undergraduate days he played football and later in life became a devotee of golf. Nine years before his death, however, he had a coronary occlusion and was advised to give up work. This he would not do, and for seven years after his illness he conducted a busy practice. The strain told on him and he eventually had to rest. For twelve months before his death he had been able to do no work at all; shortly before his death he was feeling well. He is survived by his wife and three daughters.

Dr. E. P. Blashki writes: Dr. Andrew Eric Aspinall, who passed away at his home at Turramurra on November 10, was the third son of the late Reverend A. Ashworth Aspinall. He was educated at the Scots College and graduated at Sydney in March, 1915. In the first Great War he enlisted in 1915, served in Egypt and France as regimental medical officer of the Fourth Divisional Engineers and transferred to the Second Australian Casualty Clearing Station in 1917, serving until demobilized. On his return in 1919 he commenced practice at Turramurra. His inclination was towards clinical medicine, and he held the post of assistant physician and later physician at the Royal North Shore Hospital until 1944, when he was compelled by ill health to retire, and was then appointed to the consultant staff.

Eric Aspinall had an extensive practice; his patients appreciated greatly his sound knowledge of medicine, his unfailing kindness and his devotion to duty. He was a good all-round athlete. At the university he was captain of the second football team. As a student he always had the confidence and respect of his fellows, who repeatedly elected him their representative. He enjoyed a like measure of popularity among his colleagues on the hospital staff and elsewhere. He is survived by his widow, three daughters, of whom the eldest is married to Captain W. Inglis, Australian Army Medical Corps, and the second to Flight Lieutenant George Blaxland, and one grandson.

Archibald John Aspinall was the eldest of the sons of A. Ashworth Aspinall. Like the other members of the family, he graduated in medicine at the University of Sydney, taking his degrees in 1906. He took part in much of the life of the university, being "representative" of his year and playing games. He was a member of the "second fifteen" of the university and he played football and cricket for Saint Andrew's College. On graduation in 1906 he became resident medical officer at Sydney Hospital and began an association which was broken only by his death. His second year at the hospital was spent as resident radiologist and pathologist, and during his third year he was "first senior". In this office he had the task of instructing resident medical officers in anæsthesia, and he did this with great success. Then followed three years in the office of medical superintendent. He had organizing ability which was recognized by both the honorary and resident staffs. He was able to see the broad aspects of a problem and also its implications; with this he had the gift of being able to pay attention to detail. This was shown in his surgical work and was one of the reasons for his success. It was during Aspinall's tenure of the office of superintendent that the clinical school was established at Sydney Hospital. In earlier years medical students of the University of Sydney had done all their clinical work at the Prince Alfred Hospital—the institution had not then acquired the title "Royal". Aspinall's share in the inauguration of the clinical school was considerable. In due course he went into private practice and was appointed honorary assistant surgeon; this was in 1912. In 1914 war broke out; Aspinall was a member of the Army Medical Corps, and he left Australia with the First Field

Ambulance. This was an interesting unit. B. J. Newmarch was in command and held the rank of lieutenant-colonel; R. H. Millard and E. S. Stokes were majors; the captains were J. B. St. Vincent Welch, A. J. Aspinall, L. W. Dunlop, H. R. G. Poate, C. E. Wassell and W. E. Kay. Of these, only Dunlop and Poate are living. The ambulance was present at the landing on Gallipoli. Aspinall and Poate were detailed to remain on the transport, which at once began to receive wounded. With J. B. Newmarch these two officers engaged in what was really a ferry service for wounded. They had twenty men from the ambulance and no equipment other than ambulance panniers. With more than 600 obviously wounded men on board at a time and a journey of about three and a half days to Alexandria, both ingenuity and endurance were taxed to the uttermost. About twelve men died every day and were buried at sea, Aspinall and Poate taking it in turns to read the burial service. After journeying for four months between Gallipoli, Alexandria and Malta, Aspinall and his companions rejoined the ambulance on Gallipoli. Unfortunately Aspinall became ill and had to leave before the evacuation. He was sent home to Australia in the latter end of 1916. The second world war found Aspinall anxious to serve once more. Two useful parts were assigned to him. First he was liaison medical officer on the Dutch hospital ship *Oranje* and later he became commanding officer of the 114th Australian General Hospital at Goulburn.

In civil life after the war of 1914-1918 Aspinall devoted himself with characteristic energy to his surgical work. In 1923 he joined the full staff of Sydney Hospital as honorary surgeon. On his retirement recently he was senior honorary surgeon and he was appointed to the consultant staff. In 1931 he was appointed lecturer in clinical surgery. He held appointments at other institutions. He was senior honorary surgeon of the Eastern Suburbs Hospital, Sydney, honorary consulting surgeon at the Royal South Sydney Hospital, honorary surgeon at the Women's Hospital, Sydney, and consulting surgeon to the Australian Jockey Club. He was a foundation Fellow of the Royal Australasian College of Surgeons and a member of its State Committee for New South Wales. He was a member of the board of the Scottish Hospital.

Outside the sphere of medicine Aspinall was interested in general education. He was a member of the Council of Saint Andrew's College within the University of Sydney; he also served on the councils of the Scots College, the Presbyterian Ladies' College, Croydon, and the Presbyterian Ladies' College, Pymble.

To set out Aspinall's appointments and to name the institutions and bodies with which he was associated show that he lived a full life. He was a methodical and careful worker; he was ingenious and often showed his ingenuity in the devising of splints for the treatment of patients with unusual injuries. He was a man of high ideals and transparent honesty and he had a gift of friendship. Men trusted him and were not disappointed. He did not like his name, Archibald, but preferred to be known, and always was known, as Archie. If he had to be reported as taking part in a medical meeting he preferred to be mentioned as "Archie" rather than as "Archibald" or "A.J.". On one occasion in his early years at Sydney Hospital this had a surprising result. A patient from the out-door department wrote to him and addressed the envelope to Dr. Ah Chee Aspinall. His joy and delight seemed to know no bounds. As a matter of fact no account of him would be complete without reference to his lively sense of humour and his gift of mimicry. The serious and important "honoraries" who brought their complaints and sometimes their importance to his superintendent's office, had their affairs attended to, but they also tickled his sense of humour and added to his store of anecdotes. When he was in the mood he was without an equal as a Sydney Hospital *raconteur*.

As a final word it may be said of Archie Aspinall that as a surgeon and a man he had qualities that set him apart as one worthy of emulation. He has left a lasting impression on the "body and soul" of the hospital that he served with such long and consistent devotion.

Dr. J. G. Edwards writes: So Archibald John Aspinall has passed on. Known to the profession as "Archie", he was dear to all who were privileged to know him in his student, hospital and later professional days.

He was a lovable character, upright and honest in all his ways, and his first thought was always of others and never of self. As a resident medical officer at Sydney Hospital and later as medical superintendent he showed rare kindness and great ability as a surgeon and administrator. To patients he devoted all his energy, and no effort was too great to ensure the welfare of those under his care.

During his many years as assistant and honorary surgeon he carried out his duties most efficiently, and there has probably never been a member of that staff with sounder surgical judgement, especially in acute abdominal cases. He was also in the front rank of teachers and had the knack of imparting knowledge in such a manner that it remained forever in one's memory. He had a wonderful "tissue sense", never using unnecessary violence; like his teacher, MacCormick, he "caressed" the tissues, and as a consequence his patients enjoyed a rapid convalescence.

He served with distinction in the first Great War and sacrificed a growing practice to serve his country. Although over age, he again offered his services in this war, but was rejected on medical grounds. Still determined to serve his country, he gained an appointment as liaison medical officer in the hospital ship *Oranje*, where he served for eighteen months. For his services he received a high decoration from the Netherlands Government. Later he organized the 114th Australian General Hospital at Goulburn, and once again his organizing ability placed this institution in the front line of hospital units. Ill health brought him back to consultant practice, but he was not able to work to full capacity.

He was a delightful companion at any gathering; his sense of humour was keen but kindly, his power of mimicry delightful, and he possessed a fund of anecdotes about early days at Sydney Hospital. His memory is pleasant to all of us who knew him and his life will always be an example of duty well done. All his old friends will feel the deepest regret that he will no longer be able to enliven their remaining years with his cheerful and bright presence.

Professor W. Keith Inglis writes: The death of Archie Aspinall has removed one who will be sorely missed by his colleagues and friends. His was a wide interest for good in many fields of endeavour, which extended beyond the practice of medicine.

I can speak in terms of deep appreciation of the interest he took in the scientific side of medicine. He and the late Dr. Ralph Worrall were representatives of the honorary medical staff on the Board of Directors of the Sydney Hospital soon after the end of the first world war, and it was largely the result of their efforts that the Kanematsu Institute of Pathology became established at the Sydney Hospital.

It was in no small measure due to Archie Aspinall that the *esprit de corps* in this institution was maintained at such a high level. His loyalty to his predecessors and colleagues on the honorary staff of Sydney Hospital was unbounded; he not only respected them, he loved them. He knew all their little idiosyncrasies, and, as he was a good mimic, his stories of early days at the hospital were greatly appreciated.

Others will speak of his concern for the welfare of students, of his untiring efforts on behalf of nurses, of his setting aside of personal interests to give of his best in the fighting services during both world wars, but, for those who knew him well, the feeling at present is that of deep personal loss in the passing of one who was a wise counsellor and a staunch friend, to whom one never went in vain for guidance and sympathetic understanding.

GEORGE McLEAN.

We regret to announce the death of Dr. George McLean, which occurred on February 6, 1946, at Chatswood, New South Wales.

Naval, Military and Air Force.

THE TRAINING PRIOR TO DISCHARGE OF CERTAIN SERVICE MEDICAL OFFICERS.

The following notice is published at the request of the Director-General of Medical Services of the Royal Australian Air Force.

Further to the notice concerning the above scheme which appeared in the journal of January 5, 1946, it is desired to bring to the attention of former medical officers of the Royal Australian Air Force details of the procedures to be followed in making application for an approved course of refresher training under the terms of the scheme, or for claiming ninety days' pay and allowances if an approved course has already been completed.

Application should be made direct to the Director-General of Medical Services, Royal Australian Air Force. On receipt of the application, the Director-General of Medical Services will forward to the applicant copies of the appropriate *pro forma*. This should be completed in duplicate and returned to the Director-General of Medical Services accompanied by the statutory declaration and statements as indicated on the *pro forma*.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Evans, Cyril Percival Victorious, M.B., B.S., 1943 (Univ. Sydney), 8, Andrew Street, West Ryde.
Bracken, Derek Christopher Gordon, M.B., B.S., 1940 (Univ. Sydney), 81, Darling Point Road, Edgecliff.
McManis, Arthur Geoffrey, M.B., B.S., 1936 (Univ. Sydney), 283, Cleveland Street, Redfern.
Ireland, Joseph Frank, M.B., B.S., 1940 (Univ. Sydney), NX104569, Captain, 1, Transvaal Avenue, Double Bay.
Scott-Young, Norman Reginald, M.B., B.S., 1941 (Univ. Sydney), 108, Wanganella Street, Balgowlah.
Moseley, Moira Shirley, M.B., B.S., 1943 (Univ. Sydney), 94a, Birriga Road, Bellevue Hill.

The undermentioned has applied for election as a member of the Victorian Branch of the British Medical Association:

Weber, Leighton Otto Davis, M.B., 1943, B.S., 1944 (Univ. Sydney), 522, Melbourne Road, Frankston.

The undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:

Parkinson, Arthur, M.B., B.S., 1925 (Univ. Melbourne), Queenstown, Tasmania.

Books Received.

"Principles of Human Physiology" (originally "Starling's Principles of Human Physiology"), by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., LL.D. (Birmingham); with section on the special senses by H. Hartridge, M.A., M.D., Sc.D., F.R.S.; Ninth Edition; 1945 London: J and A. Churchill, Limited. 9¾" × 6", pp. 1165, with many illustrations. Price: 36s.

"Chest Examination: The Correlation of Physical and X-Ray Findings in Diseases of the Lung", by Richard R. Trail, M.C., M.A., M.D. (Aberdeen), F.R.C.P. (London), with a Foreword by Sir Walter L. Langdon-Brown, M.A., M.D., F.R.C.P., D.Sc., LL.D.; Second Edition; 1495. London: J. and A. Churchill Limited. 8½" × 5½", pp. 135, with 94 illustrations. Price: 12s. 6d.

Diary for the Month.

Feb. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Feb. 21.—South Australian Branch, B.M.A.: Council Meeting.
Feb. 21.—Victorian Branch, B.M.A.: Executive Meeting.
Feb. 22.—Queensland Branch, B.M.A.: Council Meeting.
Feb. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
Feb. 27.—Victorian Branch, B.M.A.: Council Meeting.
Feb. 28.—South Australian Branch, B.M.A.: Scientific Meeting.
March 1.—Queensland Branch, B.M.A.: Branch Meeting.
March 2.—Tasmanian Branch, B.M.A.: Annual Meeting.
March 5.—Federal Council, B.M.A., in Australia: Meeting at Sydney.
March 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
March 6.—Western Australian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

SENIOR SISTER AND DEPUTY MATRON, GRESSWELL SANATORIUM, GENERAL HEALTH BRANCH, DEPARTMENT OF HEALTH, VICTORIA. Gresswell Sanatorium, 192 beds, is an approved part-time Training School for Nurses in Tuberculosis Diseases and for qualification for Post-Graduate Certificate in Tuberculosis. Applications, addressed to the Secretary to the Public Service Board, Public Offices, Treasury Place, Melbourne, C.2, and accompanied by evidence of experience and qualifications, and a statement of date and place of birth, are invited for the abovementioned position up to Saturday, 16th March, 1946. Yearly salary: £343 (minimum), £369 (maximum), plus cost of living allowance (£20 at present), less deduction of £42 a year for board and lodging. Qualifications: to be a general trained and certificated nurse registered in Victoria, and preferably to have had experience in charge work in a similar institution. Application forms may be obtained from the Board's office.

ST. VINCENT'S HOSPITAL, SYDNEY.—Applications are invited for the position of full-time Director of the Pathological Department. Salary £1,250 per annum. Applications, together with testimonials, to reach the Secretary of the hospital by March 15, 1946. Applicants are to state when they would be prepared to take up the appointment.

THE Presbyterian Foreign Missions Secretary would welcome inquiries regarding mission service as Medical Superintendent of a mofussil hospital in South India or as Leprosy Survey Officer in the New Hebrides Group.—Box 100, G.P.O., Sydney, BX 1597-LU 3792.

THE OTAGO HOSPITAL BOARD, UNIVERSITY OF OTAGO AND DUNEDIN HOSPITAL, N.Z. Applications, closing on Thursday, 23rd May, 1946, are invited for the following positions in the Department of Ear, Nose and Throat, viz.: (*a*) Full-time appointment at a salary at the rate of £1,500 per annum (N.Z. currency), plus allowance for teaching purposes. (*b*) Visiting Assistant Surgeon (part time) at a salary at the rate of £300 per annum (N.Z. currency), plus allowance for teaching purposes. Further information in regard to these appointments can be obtained from the office of this newspaper.—JOHN JACOBS, Secretary, the Otago Hospital Board, Dunedin, N.Z., 4th January, 1946.

UNIVERSITY OF ADELAIDE: POST-GRADUATE COMMITTEE IN MEDICINE.—Applications are invited from qualified medical practitioners for the position of part-time Medical Secretary to the above committee at a salary of £300 per annum. Preference will be given to a returned service medical officer. Details of the duties can be obtained from the Acting Registrar of the University of Adelaide. Applications will close on 28th February, 1946.—A. W. BAMPTON, Acting Registrar.

Wanted to Buy

Quality Guns and Rifles.
Highest prices given.
We also exchange guns.
SIL ROHU, 143 Elizabeth St., Sydney
Quality Firearms & Fishing Tackle
'Phone MA 3540.

W. RAMSAY (Surgical) Pty Ltd

SURGICAL INSTRUMENTS AND HOSPITAL APPLIANCES

Latest Medical and Surgical Books Available

Sole Australasian Agents "BECKS"

W. RAMSAY (Surgical) Pty. Ltd.

340 Swanston St., Melbourne
18, Howard Street, Perth
11 Austin Street, Adelaide

Medical Practitioners anticipating release from War Service may secure details of Medical Practice Opportunities from

ALLAN GRANT
Medical Agent
54 Collins St., Melbourne, C.1
'Phone: Cent. 4171
Telegrams: "Allgra, Melb."

WESTERN AUSTRALIAN PRACTICES

NEILSON HANCOCK, MEDICAL AGENT

Main line, agriculture. Income average £4,000. Price £3,000. House to rent £300, price £3,000.

Agriculture, unopposed. Income average £1,660. Price £1,000. House to rent at £1 5s. per week.

Good agriculture, unopposed. Income average £1,560. Price £900. Brick house to rent. Any reasonable offer considered.

City. Income average £4,300. Price £3,250. House available for sale.

Medical Practitioners anticipating release from War Service may secure details of Medical Practice Opportunities from

NEILSON HANCOCK,
205 St. George's Terrace, Perth
Telegraphic or Cable Address:
"Westgraph, Perth."

PULMONARY TUBERCULOSIS

Glenferrie Private Sanatorium, Leura, Blue Mountains, New South Wales

Every modern convenience. All private rooms and trays. X ray close by. Visited regularly by chest specialists. Open to all doctors. Hospice patients not taken. Fees from £4 4s.

SISTER G. M. CANTWELL
'Phone: Katoomba 37

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

COUNTRY PRACTICE. Cash takings £1,850. For sale, £1,400. House £1,100.

TASMANIAN CITY PRACTICE for sale, £3,000. House for sale or rental.

MEDICAL PRACTITIONER required for country practice. Guaranteed £800 per annum. House for sale or rental.

SUBURBAN AND COUNTRY assistants required.

PARTICULARS IN CONFIDENCE

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

Telephones B 4159
XA 2644 (After Hours)

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Telegrams: "Locumtens Sydney".

Financial Assistance

available in approved cases to facilitate transfers.

C. R. STRANGE,
Manager and Secretary.

ANDREW'S PHARMACEUTICAL PREPARATIONS

THIOURACIL

for therapy and in the pre-operative management of thyrotoxicosis, for patients with exophthalmic or adenomatous goitres, primary and secondary hyperthyroidism

Packed in bottles of 50 and 100 tablets of 0.05 grm.
" " " " 50 " " 0.2 "
Dosage in pre-operative management . . .
from 0.2 to 0.6 grm. a day.
Maintenance dosage . . .
from 0.05 to 0.2 grm. a day.

THIOUREA
in bottles of 100 tablets
of 0.25 grm.

Literature and further information provided on request from the manufacturers

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexoestrol
Sodium Desoxycholate
Stibophen
Stilboestrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.,
D.D.T.

LACTOGEN AND VI-LACTOGEN . . . *and why they are the most easily digested of all prepared foods for infants*

When our research laboratories were developing the new Spray Process Lactogen and Vi-Lactogen, they thought and worked with the single purpose of making them the best of all prepared foods for infants. Specifically, the important advantages gained by adopting the exclusive Spray Process of manufacture are:

1. Forms a softer, finer curd, more easily assimilated by baby's delicate stomach.
2. The soft, finely divided Lactogen and Vi-Lactogen curd is far more readily digestible.
3. Fat separation is avoided during feeding.

Photograph shows fine, uniform texture of Lactogen curd.

Based on the scientific fact that all milk, in the process of digestion, forms a curd, and that the ease or difficulty of digestion is dependent upon the size and toughness of the curd formed, the ultimate aim of our laboratories was to produce a baby food that would form the softest and finest of curds, and at the same time, retain the full nourishing qualities necessary to baby's growth and development. Lactogen and Vi-Lactogen, made by the new exclusive Spray Process, forms a softer, finer curd of uniform texture, making them the easiest of all prepared foods for infants to digest. In addition, both foods are modified with added cream and lactose so that baby can quickly assimilate all the nutritive goodness. Whether used as supplementary to, or wholly as a substitute for, breast milk, Lactogen and Vi-Lactogen can be recommended as safe, alternative foods of the highest quality. Vi-Lactogen . . . modified more closely to breast milk composition, is intended for the young baby. Lactogen, with its higher protein content, is the ideal food as baby grows older.

THE MILK FOOD
LACTOGEN
NESTLE'S PRODUCT

LACTOGEN
AND
VI-LACTOGEN
Nestlé's Product

FUNGOID INFECTIONS—SUCH AS TINEA—RESPOND FAVOURABLY TO TRICOTOX

Summer infection caused by a species of trichophyton fungus calls for a treatment which will attack the fungus in the deeper layers of the skin where it germinates. Tricotox-Stearns is a combination of keratolytic and antiseptic ingredients in a low melting point base, which penetrates through the epidermal layers, bringing the active ingredients into intimate contact with the fungus. Upon application to the affected part, Tricotox produces keratolysis and the fungus is exposed to the action of the powerful antiseptic ingredients which are included in Tricotox.

TRICOTOX
OINTMENT
For treating various forms of infection with Trichophyton or Epidermophyton
Frederick Stearns & Company
Sydney Australia

TRICOTOX

STEARNS

Tricotox is offered in convenient 1-oz. jars. Samples and further literature will be gladly forwarded to the medical profession upon request.

FACTS ABOUT TRICOTOX

Tricotox is a rational combination of

(1) Salicylic Acid—well known for its keratolytic action;

(2) Benzoic Acid—as a mild antiseptic;

(3) Chlorthymol—powerfully effective antiseptic even in dilute solutions. Especially valuable in destroying fungoid growths.

(4) Low melting point base containing lanoline ensures rapid penetration and absorption.

Tricotox-Stearns is easy to apply, quickly absorbed, penetrating and powerfully antiseptic. An unusually efficacious application for the treatment of fungus diseases in general.

Frederick **Stearns** & Company
Division
SYDNEY, AUSTRALIA

ANNOUNCEMENT!

STANFORD X-RAY CO. PTY. LTD.—Manufacturers and Suppliers of X-ray and Electro-medical Equipment—direct your attention to their interstate offices and showrooms, where competent and highly skilled X-ray engineers are available to assist you with your X-ray and Electro-medical technical problems.

ADELAIDE: 188 North Terrace—Cent. 5895.
BRISBANE: Wickham Terrace—B 4291.
HOBART: 94 Liverpool Street—W 1876.
MELBOURNE: 71 Collins Street, C.1—JM 1695, Cent. 5695.
PERTH: 20 Howard Street—B 8448.
SYDNEY: 135 Macquarie Street—B 7263.

ANGESIL

D·H·A
ANGESIL
TABLETS
'THERE GOES
ANOTHER
HEADACHE'

Formula:

Acid Acetyl Salicyl.	0.32	gm.
Phenacetin . . .	0.26	gm.
Codein	0.006	gm.

Tubes containing 10 tablets, 20 tablets, and in bottles containing 100 tablets.

Elliotts & Australian Drug Pty. Ltd., Sydney

WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

Medical Practices, etc.

Medical.

1. Unopposed country practice, excellent climate, south N.S.W. Average cash take £1,200. Good public hospital. Premium £1,000.
2. Unopposed subsidized practice, northern N.S.W. Cash take £1,100. Residence to rent. Price £600.

All Enquiries Confidential.

GOYDER, SON & CO.,

Medical Agents,

Cathcart House, 11c Castlereagh Street, Sydney. / BW 7149.

After Hours: JA 7202.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)

NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.

Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary.

MISS E. P. EVANS,

Manchester Unity Building, 185 Elizabeth Street, Sydney.

(MA 2031.)

COMMONWEALTH OF AUSTRALIA, REPATRIATION COMMISSION: VACANCIES FOR MEDICAL OFFICER (PATHOLOGIST).—Applications are invited for appointment as Specialist Medical Officer (Pathologist) at the Prince of Wales Repatriation General Hospital, Randwick, Sydney, and the Repatriation General Hospital, Caulfield, Melbourne. The appointments will be on probation for a period of six months, as provided for in staff regulations, and salaries will be subject to cost of living variations. The existing salary range of the positions is £1,040-£1,090-£1,140-£1,190-£1,240, and, on confirmation of appointments, the successful applicants will become eligible to contribute for the benefits of the Superannuation Act. Long service furlough, recreation leave and sick leave are granted under Commonwealth Public Service conditions. Applicants will state whether they are married or single, their age, war service (if any), and the appointees will be required to meet the cost of their transportation to Sydney or Melbourne, as the case may be. Private practice will not be allowed. Applications are to be lodged not later than Friday, 1st March, 1946, with the Deputy Commissioner of Repatriation in the capital city of the State in which the applicants usually reside.—G. F. Wootten, Chairman, Repatriation Commission, Melbourne.

WANTED, Small Electric Centrifuge. Apply No. 101, c.o. The Medical Journal of Australia, Seamer St., Glebe, Sydney, N.S.W.

Service for Doctors

Watson House, Bligh Street, Sydney.

Telephone: BW4433.

Principals, Please Note.—We have a number of young married practitioners, mostly ex-services, who are anxious to enter general practice in the city or country as assistants or junior partners, and who reside in the following Sydney suburbs: Balmoral, Bellevue Hill, Bondi, Chatswood, Cronulla, Gordon, Mosman, Roseville, Rose Bay and Wollstonecraft.

Vendors, Please Note.—We have a number of ex-service doctors who are cash buyers for suburban or country practices, goodwill and property, with residence, for exchange in the following Sydney suburbs: Bondi, Chatswood, Gordon, Rose Bay, Bellevue Hill and Balmoral.

Particulars in Confidence.

WATSON VICTOR
LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

DEVON PUBLIC HOSPITAL, LATROBE, TASMANIA (120 Beds, General, Obstetric and Infectious): SENIOR RESIDENT MEDICAL OFFICER. — Applications are invited for the above position. Applicants must state age, marital state, qualifications and experience, and when available, and must be capable of doing all general surgical work required. Commencing salary £600 p.a.—L. E. O. Ready, Secretary.

RENWICK HOSPITAL FOR INFANTS, SUMMER HILL. Applications, on prescribed form, are invited for the position of Resident Medical Officer. Salary at the rate of £4 p.w. Vacancy March. Particulars, Medical Superintendent.—W. B. Rodd, Secretary, Benevolent Society of N.S.W., General Offices, Thomas Street, Sydney.

PUBLIC SERVICE OF SOUTH AUSTRALIA. — Applications will be received by the Public Service Commissioner, Adelaide, South Australia, until and including Friday, 15th March, 1946, for the position of Resident Medical Officer for South Australian Government Mental Hospitals. Terms of appointment: The position is a resident one, a house is provided at Parkside at a rental of £2 10s. per week, and the appointee will not be allowed private practice. Four weeks' leave is granted annually, plus one day in lieu of each public holiday worked, and six months' leave on full pay is granted after each five years' resident service in a mental institution. The salary will be within the range from £730 to £830 per annum. Applicants should give full details of their academic attainments and practical experience, supported by testimonials if possible. Applicants with military service should supply particulars of the length, locality and nature of such service. Before permanent appointment, a medical examination will be required, and if permanently appointed, the officer may be required to subscribe to the South Australian Superannuation Fund.—G. H. P. Jeffery, Acting Secretary, Public Service Commissioner.

MILDURA BASE HOSPITAL, VICTORIA: MEDICAL SUPERINTENDENT. — Applications are invited for the position of Resident Medical Superintendent at the above institution, which has a daily average of 174 in-patients, including private, intermediate and public patients, with general and midwifery wards. The appointment will not carry the right to a private practice. A sound knowledge of radiology or pathology, or both, is essential. A senior degree in medicine or diploma in radiology is desirable. The salary will be at the rate of £1,000 per annum plus an allowance in lieu of residence until such time as a hospital residence is made available. Applicants should give full details of qualifications, experience, age and war service (if any).—E. J. R. Taylor, Manager and Secretary.

FOR SALE, goodwill of the medical practice conducted by the late Dr. Dudley Stewart Small at Casino. The purchaser will be given the opportunity of purchasing a 10 horse-power Morris sedan car at pegged price and of acquiring from the owner a long lease (with an option of purchase) of the modern 2-storey brick residence occupied by the late Dr. Small. For further particulars apply: Perpetual Trustee Company (Limited), 33-39 Hunter Street, Sydney, or Messrs. Cope Norton and Sedgwick, Solicitors, Casino.

RICHMOND DISPENSARY AND OUT PATIENTS CLINIC.—Applications are requested from qualified medical practitioners for the position of Medical Officer to the above institution. Conditions of service: five half-days weekly, salary £350 per annum. Applications in writing to be submitted to the Secretary before February 26.—William J. Bell, Secretary, 283 Church Street, Richmond, E.1.

ROYAL HOBART HOSPITAL, TASMANIA: JUNIOR RESIDENT MEDICAL OFFICERS. The undersigned invites applications from duly qualified medical practitioners for appointment to the above positions. Salary £350 per annum, with board and residence in accordance with provisions of the Hospitals Wages Board Determination. Annual leave amounting to two weeks is granted upon completion of twelve months' service. Applicants are informed that, owing to the present shortage of medical personnel, they may, during the course of their appointment, be called upon to render service under the Emergency Medical Service or in the Government Medical Service centres for not more than four weeks of their term. Applicants to state age, qualifications and date able to assume duty if appointed. Applications to be accompanied by three recent testimonials. Single fares at boat and train rates refunded on completion of six months' service. The conditions of this appointment are approved by the British Medical Association and State Medical Coordination Committee.—H. M. Wright, Secretary.

AUSTRALIAN GENERAL SURGEON, aged 36, late Lieutenant-Colonel, R.A.M.C., seeks partnership in general practice or other surgical employment in Australia. Apply No. 102, c.o. The Medical Journal of Australia, Seamer St., Glebe, Sydney, N.S.W.

ESTABLISHED GENERAL PRACTITIONER desires to purchase practice about £2,000 p.a. with reasonably modern house in good class suburb. Apply G.P., c.o. The Medical Journal of Australia, Seamer Street, Glebe, Sydney, N.S.W.

HALLAM

PTY. LTD.

Pharmaceutical Chemists

(Est. over 50 years)

Specialise in Dispensing the laboratory requirements of Physicians and Surgeons.

Microscopic Stains.

Intravenous Solutions.

Anæsthetics, etc.

•

Agents in New South Wales for all products of

Evans Sons Lescher & Webb Ltd., London

•

PHARMACIES NEAR MACQUARIE STREET:

168 King Street.
Corner Phillip & Bent Streets.
Corner Hunter & Elizabeth Streets.
63 Elizabeth Streets.

•

Head Office:

312 GEORGE STREET
(opposite Wynyard Station)

14 Pharmacies SYDNEY and SUBURBS

MEDICAL ASSISTANCE FOR LORD HOWE ISLAND.—The Lord Howe Island Board of Control wishes to establish contact with practitioners of medical and surgical experience desirous of spending a holiday of, say, twelve months' duration at the island. The Board will pay a retainer to the selected doctor at the rate of £400 per annum, in addition to which the doctor would secure the returns from private practice there. The Board will also meet the cost of the doctor's transport between Sydney and the island. Full particulars are obtainable from the Chairman, c.o. Chief Secretary's Department, Sydney.

THE ROYAL MELBOURNE HOSPITAL.—Applications are invited from unmarried, legally qualified medical practitioners for the position of Assistant Medical Superintendent. Salary £450 per annum to commence, in addition to board and lodging. Full particulars are obtainable from the Medical Superintendent. Applications, accompanied by testimonials, should be lodged with the Manager, The Royal Melbourne Hospital, Grattan Street, Parkville, not later than 12 noon on the 30th March, 1946.—R. E. Fanning, Manager.

Keep Tightly Closed
84
Pulvules No. 66
LEXTRON FERROUS
Lilly
ELI LILLY AND COMPANY
INDIANAPOLIS, U.S.A.
Keep Tightly Closed
84
Pulvules No. 55
LEXTRON
Lilly
ELI LILLY AND COMPANY
INDIANAPOLIS, U.S.A.

VERSATILE ANTIANEMIA PREPARATIONS

The therapeutic effectiveness of Pulvules 'Lextron' (Liver-Stomach Concentrate with Ferric Iron and Vitamin B Complex, Lilly) and 'Lextron Ferrous' (Liver-Stomach Concentrate with Ferrous Iron and Vitamin B Complex, Lilly) is clinically demonstrated in both "primary" and "secondary" anemias. One pulvule of either product contains sufficient liver-stomach concentrate to exert an antianemia effect approximately equivalent to that produced by the ingestion of twenty grams of fresh raw liver. The various factors of vitamin B complex represented are of special significance in the majority of anemias. Adequate iron intake is assured by the incorporation of 0.2 Gm. of Iron and Ammonium Citrates, Green, in 'Lextron,' 0.1 Gm. of Ferrous Sulfate, Anhydrous, in 'Lextron Ferrous.' Twelve pulvules daily are adequate for the treatment of an uncomplicated case of pernicious anemia, six to twelve daily for microcytic hypochromic anemias. Available through prescription pharmacies.

FOR THE PHYSICIAN'S PRESCRIPTION

Distributor:
CHARLES MARKELL COMPANY PTY., LIMITED
SYDNEY, N. S. W.
Eli Lilly International Corporation, *Indianapolis 6, Indiana, U. S. A.*

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by Arthur Frederick Roots Simpson, of Fairholm Street, Strathfield, New South Wales, on behalf of the Australasian Medical Publishing Company Limited, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 23, 1946. No. 8.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units 10/6
This quantity is sufficient for a series of parenteral doses.
(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units 5/6
This quantity is intended for a single parenteral dose.
(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units 4/6
This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired.
(Available also in boxes holding 6 ampoules.)

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

The Penicillin Order published in *Gazette* No. 189 of 20th September, 1944, and in THE MEDICAL JOURNAL OF AUSTRALIA of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

The addresses of the Senior Commonwealth Medical Officers are: NEW SOUTH WALES, Customs House, Circular Quay, Sydney; VICTORIA, A.C.A. Building, 118 Queen Street, Melbourne; SOUTH AUSTRALIA, C.M.L. Building, 41-47 King William Street, Adelaide; WESTERN AUSTRALIA, 4th Floor, G.P.O., Perth; TASMANIA, Commonwealth Health Laboratory, Launceston; QUEENSLAND, Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES
PARKVILLE, N.2, VICTORIA, AUSTRALIA

Your Favourite Prescription in Tablet Form:

Glycero-barbital Tablets

Glycerophosphates Co.
Phenobarbital
Vitamin B_1

Tonic
with
Sedative Control

Adult Dosage: One tablet, three or four times daily, as ordered by the physician.

Children's Dosage: Over 6 years, one tablet twice to three times daily.

Price to Patients: Bottles of 25 tabs., 3/6d. retail.
Bottles of 100 tabs., 12/6d. retail.

Fawns & McAllan

CENTRAL ST., HOBART. 140 QUEEN ST., MELBOURNE. 8a CASTLEREAGH ST., SYDNEY.

"Extra Quality at No Extra Cost"

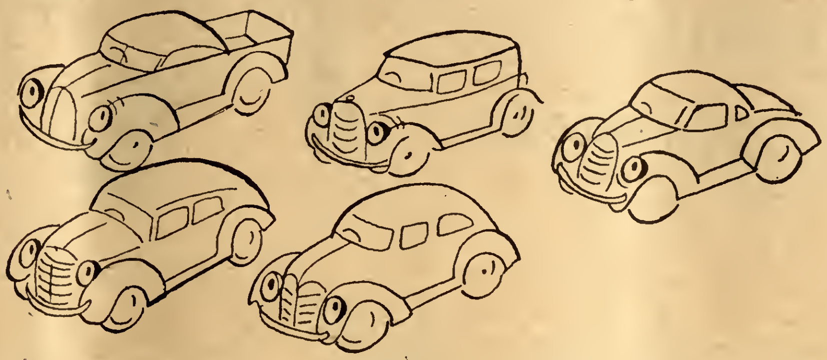
BY APPOINTMENT

Horlicks for the Expectant and Nursing Mother

Horlicks, made from pure, fresh full-cream cows' milk and the nutritive extracts of wheat and malted barley, forms an ideal addition to the diet of expectant and nursing mothers.

Horlicks is valuable in all conditions associated with acidosis. Its regular inclusion in the diet tends to prevent and relieve morning sickness; aids in the formation of regular bowel habits; and ensures a sufficiency of calories for adequate flow of milk from the breast without causing digestive disturbance.

We are the Cars of the old brigade



still going strong on

Mobiloil

72% of the cars and trucks on the road today are over 10 years old — so look after the one you now have. It may be some time yet before cars and trucks are plentiful, but Mobiloil, the World's Quality Oil, will protect your ageing vehicle under all conditions.

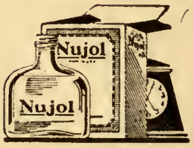
VACUUM OIL CO. PTY. LTD. (Incorp. in Aust.)

THE WORLD'S QUALITY OIL

GARGOYLE
"A"
Mobiloil
Property of Vacuum Oil Company
VACUUM
QUALITY PRODUCT

M464

Your safeguard against Contamination



Every doctor exercises rigid care in eliminating all sources of contamination before contact with his patient, and in no less degree should his prescriptions be protected from the dirt, dust and other elements that may affect the quality of the medicine prescribed.

Nujol is packed in a **sealed carton** for greater safety, and has a standardised quality and purity which never varies. Nujol viscosity, proved by intensive scientific clinical tests is physiologically correct, and as pure as science can make it, so avoid all risk by prescribing Nujol by name and be assured of a reliable product, backed by the experience of the world's foremost liquid paraffin producer.

Nujol

STANCO (AUST.) PTY. LTD.
15 Grosvenor Street
SYDNEY

YOUR WILL

IS IT UP TO DATE?

It is a good plan to read over your Will now and again to make certain it is up to date.

Be sure that it includes provision for an Executor with long experience and sound judgment to administer the Will.

If you wish to appoint a friend as Executor, appoint him in conjunction with Perpetual Trustee Company Limited. By doing this you ensure security combined with efficient management—already proved in the successful administration of thousands of Estates over the past 60 years.

Write for a copy of its booklet, "Your Executor and Trustee", which explains the service that the Company renders and what it costs.

PERPETUAL TRUSTEE
COMPANY LIMITED

DIRECTORS:
T. H. Kelly (Chairman); Hon. T. A. J. Playfair, M.L.C.;
E. R. Knox; H. Norman Pope; Allen C. Lewis;
Hon. J. P. Abbott, M.H.R.
H. V. Douglass, Managing Director.
A. G. Armytage, Manager.

Executor and Trustee, Agent under Power of Attorney for absentees and others, Administrator, etc.
TRUST AND AGENCY FUNDS UNDER ADMINISTRATION EXCEED £64,000,000.
(The average estate being less than £10,000.)

33-39 HUNTER STREET, SYDNEY

Southern and Riverina District Representative: D. A. Cormack, Gurwood Street, Wagga Wagga.
Western District Representative: H. A. Shaw, 140 Lord's Place, Orange.
Northern District Representative: F. T. B. Thomas, Fitzroy Street, Tamworth.

GOLD MEDAL, International Congress of Medicine, 1913

NOVOCAIN

Brand Ethocain
Hydrochloride.
THE ORIGINAL PREPARATION.
English Trade Mark No. 276477 (1905).
COCAINE-FREE Local Anæsthetic.

Throughout the war NOVOCAIN preparations have continued to be available in all forms, viz.:

Solutions in Ampoules, 1 oz. and 2 oz. Bottles, Stoppered or Rubber Capped. Tablets in various sizes and Powder.

Prices have been maintained at pre-war levels.

THE SAFEST AND MOST RELIABLE LOCAL ANÆSTHETIC.

Six to seven times less toxic than Cocaine.

Literature and Full Technique on Request.

Sold Under Agreement.

THE SACCHARIN CORPORATION, Limited
84 MALFORD GROVE, SNARESBROOK, LONDON, E.18
Telephone: WANSTEAD 3287
Australian Agents: J. L. Brown & Co.,
123 William Street, Melbourne, C.1.

HPL

For Acute and Chronic Protein Deficiency

Supplies of enzymic digest of casein are now available and provide a readily absorbed source of nitrogen for the treatment of all cases conditioned by a protein deficiency. Containing all the amino acids necessary for human nutrition, 'PRONUTRIN' is indicated where there is inability to absorb, digest or ingest protein — for example — before and after severe surgical procedure; in ulcerative colitis and peptic ulcer; in infantile gastro-enteritis and dysentery; in chronic sepsis and burns and for tissue regeneration.

'PRONUTRIN' is obtainable as a palatable, soluble powder which can be dissolved in water, and flavoured to taste for oral administration.

'PRONUTRIN'

Trade Mark Brand

CASEIN HYDROLYSATE

Available in tins containing 1 lb.

Full details and literature will gladly be sent on request

HPL HERTS PHARMACEUTICALS LTD.
WELWYN GARDEN CITY, ENGLAND HPL

Distributing Agents : Messrs. MARTIN & Co. (Surgical) Ltd., Corner Hunter & Phillip Streets, Sydney

M.6

Like expelling water from a sponge

"Salyrgan" is extensively employed in the treatment of cardiac and cardiorenal œdema as well as in the dropsy of nephrosis. In most cases diuresis sets in promptly and the urinary output is satisfactorily high.

"Salyrgan" is preferably administered intravenously, but may also be given intramuscularly.

Available in boxes of ampoules.	5 x 1 c.c. 5 x 2 c.c. 10 x 2 c.c.

"SALYRGAN"

TRADE MARK

BRAND OF MERSALYL WITH THEOPHYLLINE

BAYER PHARMA PTY. LTD.
56 Young Street, Sydney

BAYER

DISTRIBUTORS: FASSETT & JOHNSON LTD., CHALMERS STREET, SYDNEY

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 23, 1946. No. 8.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

Page.

ORIGINAL ARTICLES—

Acute Porphyria, with Reports of Two Fatal Cases, by E. H. Derrick 241
A Note on the Use of Penicillin in the Laboratory Diagnosis of Whooping-Cough, by Phyllis M. Anderson 244
Epidemic Polyarthritis, by P. G. Dowling 245

REPORTS OF CASES—

Moulds in the Lungs, by J. B. Cleland 247

REVIEWS—

Neurosurgery 247
Massage and Medical Gymnastics 248

LEADING ARTICLES—

Australia and Science: The University of Sydney and Scientists 249

CURRENT COMMENT—

Porphyria 250

ABSTRACTS FROM MEDICAL LITERATURE—

Pædiatrics 252
Orthopædic Surgery 253

MEDICO-LEGAL—

Hocking versus Bell 254

BRITISH MEDICAL ASSOCIATION NEWS—

Notice 273

Page.

MEDICAL SOCIETIES—

The Medico-Legal Society of Victoria 273

POST-GRADUATE WORK—

The University of Queensland Post-Graduate Medical Education Committee 273

CORRESPONDENCE—

Politics and the Medical Profession 273
Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease 274
Inguinal Hernia and its Repair 274
Ulcers in the Mouth: An Appeal for Help 274
Toothache and Folk-Lore 275
Functional Disorders 275
Obstetric Bulletins 275
The Adequacy of Medical Training 275
The Digestion of Dogs and Chronic Osteomyelitis 275

NAVAL, MILITARY AND AIR FORCE—

Appointments 275

AUSTRALIAN MEDICAL BOARD PROCEEDINGS—

Queensland 276
BOOKS RECEIVED 276
MEDICAL APPOINTMENTS 276
DIARY FOR THE MONTH 276
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 276
EDITORIAL NOTICES 276

ACUTE PORPHYRIA, WITH REPORTS OF TWO FATAL CASES.

By E. H. DERRICK,
The Queensland Institute of Medical Research, Brisbane.

PORPHYRIA is a condition due to a disorder of porphyrin metabolism. The abnormal excretion of porphyrins in the urine constitutes the symptom porphyrinuria.

Porphyrins comprise an integral part of the molecules of hæmoglobin, myoglobin and cytochrome. The metabolic error in porphyria is possibly related to some enzyme concerned in the synthesis of one or other of these molecules. The porphyrins in the urine do not come from destruction of hæmoglobin, so that the old term "hæmatoporphyrinuria" is a misnomer.

Porphyria occurs in two main types—congenital and acute. Congenital porphyria is an extremely chronic condition. It appears at birth or early in life, and is characterized by predominance in males, by the passage in the urine of large amounts of porphyrin, particularly uroporphyrin I, by photosensitivity and by discoloration of the teeth by impregnated uroporphyrin.

Acute porphyria differs in many respects from the congenital form; it appears later, usually during the third or fourth decade; females are affected three times as often as males; photosensitivity is rare; pigmentation of the teeth does not occur; the outstanding clinical features refer to the nervous system and the abdomen; the urinary porphyrin is predominantly uroporphyrin III. It resembles the congenital form in that a familial tendency is often present.

An attack of acute porphyria is actually an episode in the course of a chronic disease. Attacks may alternate with remissions for years. The chief clinical manifestations of the acute attack are the passage of dark reddish-brown urine, severe abdominal pain associated usually with nausea, vomiting and constipation, and nervous symptoms. The last may include paræsthesiæ, pain in limbs, various forms of paralysis, toxic psychosis, delirium, coma *et cetera.* Fever or leucocytosis may or may not be present. Jaundice and renal damage have been described. Menstrual disturbances, particularly amenorrhœa, are frequent. Pigmentation of the skin occurs occasionally.

There is no satisfactory treatment.

The cause of the acute attack is obscure. The metabolic error is not limited to the period of acute symptoms; these patients may excrete porphyrin during the remissions. Symptoms are probably due to the toxic action on nerve cells of porphyrins or possibly of other pigments. Spasm of the bowel may explain the abdominal pain. The acute attack may end fatally—a termination frequently due to respiratory failure from bulbar involvement. The onset of acute episodes has been ascribed in some cases to the ingestion of various drugs—sulphonal, barbiturates *et cetera.* In other cases no such cause is apparent. It is likely that the drugs or toxic substances act only as precipitating factors in subjects with a chronic disorder of porphyrin metabolism. (Various drugs may cause the excretion of small amounts of porphyrin in the urine of persons who have no metabolic error.)

During the attack the urine is characteristically dark or red. It may be normal in colour when passed, and may darken on standing. It contains uroporphyrins, which are often excreted as a zinc metal complex. On spectroscopic examination this substance gives two bands easily mistaken for those of oxyhæmoglobin, and it has been suggested that some cases of porphyrinuria have in this way been wrongly regarded as of hæmoglobinuria. If a little concentrated hydrochloric acid is added to the urine, the metal complex is immediately broken up and the bands are replaced by those of acid uroporphyrin. Since porphyrins contain no iron or protein, the tests of the urine for protein and blood will give negative results. Uroporphyrin and its zinc metal complex may be present in the urine also during the remissions.

Other pigments may be involved in porphyria and contribute to the colour of the urine. The urine also contains a colourless substance, porphobilinogen, the presence of which Watson and Schwartz(1) believe to be pathognomonic of porphyria. They have devised for it a simple test—a modification of Ehrlich's aldehyde reaction. The test will obviously be of most value in those cases in which the freshly voided urine is normal in colour. The test is as follows. Equal parts of urine and Ehrlich's reagent are mixed in a test tube. To this mixture is then added an equal volume of a saturated aqueous solution of sodium acetate. A few millilitres of chloroform are added, and the solutions are thoroughly mixed. The aldehyde compound of porphobilinogen—deep red in colour—remains in the aqueous fraction, while that of urobilinogen is completely extracted by the chloroform. The solution must contain the concentration of salt as achieved by the abovementioned proportions; otherwise the extraction of urobilinogen will not be complete. It is believed that a chloroform-insoluble compound, as obtained by the method described, is due to porphobilinogen and is pathognomonic of porphyria. (Watson and Schwartz made up Ehrlich's reagent according to the following formula: paradimethylamino-benzaldehyde, 0·7 gramme; concentrated hydrochloric acid, 150 millilitres; distilled water, 100 millilitres.)

By means of this test Nesbitt(2) discovered two cases of latent porphyria among 43 relatives of a patient. He suggests that the disease is not so unusual as was formerly supposed, and that with a more general knowledge of the subject more cases will be detected. Actually more than 250 cases of acute porphyria had been reported up to 1939.

Two cases have recently come to my notice and are described below. I am indebted to the articles by Nesbitt and by Nesbitt and Watkins(3) for an understanding of the disease. Another informative review is that by Chandler, Harrison and Rimington.(4) A discussion of the chemistry of the various porphyrins as well as fuller details of the disease will be found in these articles.

Reports of Cases.

CASE I.—Mrs. D.C., aged twenty-seven years, was admitted to hospital on June 22, 1944. In 1931, at the age of fourteen years, she had had a severe illness diagnosed as meningitis. The symptoms were high temperature and delirium. The illness lasted ten days and ended abruptly. In 1935 she commenced training as a mental nurse. During her training she was described as a tall girl, freckled, with reddish complexion and hair, of a restless, somewhat temperamental type, but intelligent and capable, probably above the average. Her health in general was good until 1942 or 1943, though her mother said that in about 1938 there occurred a mysterious illness, lasting about a week, in which the symptoms were exactly the same as in the illness of 1931. She married about 1942, but as her husband was in the Australian Imperial Force, she continued to nurse till October, 1943, when she resigned because of ill health. A medical report in the previous month mentioned pallor, considerable loss of weight, an unhealthy condition of the pelvic organs, nervous exhaustion and mental depression. Some unhappiness was due to marital complications. For the next eight months she suffered from general weakness, but was able to undertake light duties. There was no mention in the past history of abnormally coloured urine or of photosensitivity.

The present illness began with the onset of a menstrual period about a fortnight before her admission to hospital. (She had always suffered from dysmenorrhœa.) She first complained of pain in the legs and inability to walk. Then followed severe abdominal pain and vomiting. She could not sleep, even with the help of drugs. The temperature was raised. At the time of her admission to hospital she complained of pain in the abdomen and legs, sleeplessness and worry. The abdomen was tense and tender. While she was in hospital she had slight fever on four days, the maximum temperature being 37·4° C. (99·4° F.). The pulse rate varied from 84 to 130 per minute. Abdominal pain continued for some days. Constipation and occasional vomiting were present. She also had pain and tenderness in the back and limbs. The limb pains continued till June 30, 1944. The extremities were always cold. There was no loss of sensation and the reflexes were present. Sleeplessness was the rule. A variety of analgesics and sedatives was given. She was noted to be emotional and restless. She was noisy at times, calling out for the nursing staff and disturbing other patients. In spite of her illness she was keen to be up and about and repeatedly got out of bed. On other days she was depressed. She gradually became weaker and died on July 3. The final illness had lasted about 25 days.

On June 24 the red blood cells numbered 5,200,000 and the leucocytes 14,000 per cubic millimetre. Neutrophile cells comprised 86% and lymphocytes 14% of the leucocytes. The hæmoglobin value was 100%. Punctate basophile cells numbered 4,000 per million red cells. The Wassermann and Kline tests produced no response. On the day of death the patient's blood contained 45 milligrammes of urea per 100 millilitres.

The daily quantity of urine passed was apparently normal. The specific gravity varied from 1,012 to 1,024, and the urine contained no albumin or sugar. The colour was amber as a rule, sometimes reddish brown; that in the bladder at autopsy was dark reddish-brown. Examination of the urine under ultra-violet light revealed intense pink fluorescence. Spectroscopic examination revealed absorption bands regarded as those of oxyhæmoglobin; no doubt these were really those of the zinc porphyrin complex. The urine was acidified with glacial acetic acid and shaken with amyl alcohol according to the technique described by Harrison.(5) The extract showed spectroscopically the bands of alkaline porphyrin. When hydrochloric acid was added they changed to those of acid porphyrin. No test was made for porphobilinogen.

The autopsy provided very little significant information. The patient's hair was reddish, but the face was rather bronzed, the colour being more reminiscent of a seaside holiday than a period in hospital. Small hæmorrhages were present in the lungs, and congestion of the liver and kidneys and evidence of old salpingitis were found. The uterine tubes were blocked at the outer ends and were slightly distended with blood-stained fluid.

Histological examination of the *medulla oblongata* revealed many more *corpora amylacea* than are usual at the patient's age. Large groups of them were seen in the floor of the fourth ventricle. This implies that there had been some destruction of nervous tissue. One arteriole was surrounded by a thick ring of lymphocytes with a few histiocytes. In other vessels a few perivascular lymphocytes were seen. In a section of parietal cortex a few lymphocytes were noticed around some vessels and small groups of histiocytes containing yellow pigment around others. *Corpora amylacea* were few. Some petechiæ were present in both medulla and cortex.

There was some cloudy swelling of liver and kidney cells. Many hepatic cells and Kupffer cells contained fat. There were no abnormal deposits of pigment. The heart and spleen tissues were normal. Examination of lung section revealed early bronchopneumonia not evident macroscopically.

Because of a clinical suspicion of lead poisoning, the organs were submitted to the Deputy Government Analyst, Mr. S. B. Watkins, M.Sc. He found lead to be present in the following amounts, expressed as milligrammes per 100 grammes of tissue: liver, 0·31; spleen, 0·15; kidney, 0·23; brain, 0·2; rib, 1·4; skull, 2·1. The urine contained 0·05 milligramme per litre. Such amounts do not support a diagnosis of lead poisoning. The analyst found no other poison in the viscera.

The immediate family consisted of the father, mother, two brothers and two sisters. As they lived in the country it was not possible to examine them, but an opportunity arose in June, 1945, to interview the mother, aged fifty years. The result of that interview, recounted below, suggests strongly that she too suffered from porphyria. The father was healthy. Urine from one brother and one sister was examined, but no significant results were obtained.

The mother had noticed that her urine became dark at times. She had suffered from periodic attacks of pain and vomiting for at least ten years. The pain might continue for some weeks and then she might be free from pain for months. An attack seven years before had been diagnosed as due to gastric ulcer; for this she was in and out of hospital for four months. An X-ray examination at the end of that time showed no sign of ulcer. The severest attack was the most recent; it had occurred in April, 1945, and lasted for three weeks. She had a "terrific" pain in the left side of the chest (the usual site of the pain), extending to the left costal margin, the throat and the back of the neck. She vomited repeatedly.

A sample of urine obtained on June 8 was deep amber in colour. With the Watson-Schwartz test a pink colour was given which was not taken up by the chloroform. Under the ultra-violet light salmon-pink fluorescence was detected in the urine. The absorption bands of porphyrin could not, however, be demonstrated spectroscopically in the small sample of urine available. A larger sample was obtained three days later. It was pale in colour, it fluoresced normally (light blue) with ultra-violet light and showed no spectroscopic abnormality. It reacted like the first sample to the Watson-Schwartz test. Neither sample of urine became darker on standing.

CASE II.—Miss N.D., aged twenty-four years, was first admitted to hospital on April 25, 1943, complaining of acute pain in the lower part of the abdomen and back of three days' duration. This accompanied the onset of menstruation. During the prevous twelve months she had had some vague ill health with tiredness, not requiring medical advice, and had noticed the passage of dark brown urine on two or three days a week during that period. She was, however, well just before the present attack began.

On examination of the patient, the temperature and pulse were normal. The abdomen was soft, and in it neither tenderness nor swelling was observed. The urine was reddish-brown and contained no albumin or sugar, and microscopic examination revealed no pus or red cells. The uterus was retroverted. No tenderness was present in the fornices. The pulse rate was recorded every hour on the night of April 26; it rose to 132 per minute. Severe lower abdominal pain and pronounced sweating were present, but no rise in temperature. It was feared that some surgical emergency had developed in the lower part of the abdomen, perhaps with hæmorrhage.

After consultation, laparotomy was performed on the morning of April 27. In the abdomen a very small quantity of blackish fluid was seen between the coils of intestine. The viscera were normal. No abnormal peristalsis was observed. On this morning the urine darkened to a port-wine colour. This colour persisted for several days and then gradually became lighter. Some specimens were normal in colour. During the period up to May 9 the reddish-brown coloration reappeared in the urine, but not the port-wine colour. In an examination of the urine on May 12, alkaline and acid porphyrin were in turn demonstrated spectroscopically in an amyl alcohol extract.

The severe pain recurred, necessitating the free use of morphine. An area of hyperæsthesia on the inside of the thigh, noticed on April 26, gradually disappeared. Blood examination on May 11 showed that the erythrocytes numbered 6,080,000 and leucocytes 12,400 per cubic millimetre (neutrophile cells 74%, lymphocytes 22%, eosinophile cells 4%). The hæmoglobin value was 118%. No abnormality in the heart and lungs was revealed in electrocardiogram or skiagram. The reflexes were elicited normally. The abdomen was not tender and could be palpated deeply.

During the next few months the patient's condition was pitiable in spite of much symptomatic treatment. She suffered much from pain in the back, abdomen, chest and limbs. She complained bitterly that she could not use her arms because of the pain in the joints and muscles. Her legs also became affected, and wasting accompanied the weakness. She was extremely miserable and anxious. Sleeplessness required hypnotics. On one occasion she complained of double vision and bad sight. At times she was mentally confused. The pulse was rapid, varying in rate from 88 to 156 per minute, but the temperature remained normal. The urine varied in colour from time to time. In June she suffered from an attack of pneumonia which was slow in resolving. By August she had lost three stone in weight and was emaciated. In September she returned home at her mother's request.

The remaining eighteen months of her life reiterated the same melancholy story, interrupted only by temporary remissions. She was in and out of hospitals. In March, 1944, the urine was dark and a good deal of pain necessitated the use of morphine. During another stay in hospital from April to July, 1944, she complained of severe pain, wasted considerably and was pale, and she generally had a rapid pulse. She appeared on several occasions to be at the point of death. The condition of the urine changed in cycles. After her return home in July she had congestion of the lung with blood-stained sputum.

In November and December, 1944, she showed considerable improvement—was able to get about the house, play the piano and so on. But this remission was followed inexorably by relapses, and eventually she died on March 31, 1945. In the final illness she was weak and wasted and complained of constant pain in the lower part of the abdomen. A tumour about the size of a hen's egg was palpable; it appeared to be in the transverse colon and may possibly have been spastic in nature. Morphine was the only treatment that relieved the pain and insomnia. Vomiting was frequent. The temperature ranged from normal to 37·7° C. (99·8° F.), the pulse rate from 100 to 140 per minute. During the whole eighteen days of her final stay in hospital the urine was port-wine coloured and contained albumin. No post-mortem examination was made.

No opportunity has arisen to examine for latent porphyria the immediate relatives, who comprise father, mother and brother.

Discussion.

These two cases illustrate many of the characteristic features of acute porphyria.

Both patients exemplify the predominance of abdominal and nervous symptoms—severe abdominal pain, limb pain suggestive of polyneuritis and symptoms referable to toxic action on the central nervous system.

In both cases there was some difficulty at first in making a diagnosis. Once the urine was studied the diagnosis became obvious. The difficulty in recognizing the disease would be much greater in those cases in which the urine is normal in colour when passed, especially if the symptoms are vague, as is likely in the earlier attacks. The severity of the abdominal symptoms led to the performance of laparotomy in Case II, as well as in many cases reported in the literature.

Both cases emphasize that the immediate prognosis in an acute attack may be serious, especially if neurological manifestations develop. The first patient died in the first attack recognized as porphyria, after an illness of about twenty-five days. It is likely, however, that much of her ill health in the preceding ten months or more was due to the same cause. It is even conceivable that porphyria was responsible for the illnesses of thirteen years and six years before. In Case II the diagnosis was made in the first clinical attack. Previously there had been a period of latent or mild porphyria. The subsequent course was marked by progressive but irregular deterioration till death ensued twenty-three months later.

Yet perhaps this paints too gloomy a picture. Although these two cases ended fatally, it was their very severity that brought them to notice. There may well exist in the community a number of mild cases, and we know that the latent phase can be prolonged. Such mild and latent cases could easily be overlooked. One of Waldenström's patients was still living twenty-seven years after the disease appeared clinically. The mother of the first patient, herself a probable sufferer, has reached the age of fifty years.

There is no evidence that the attacks in either case were induced by drugs, but the possibility cannot be excluded. After the symptoms had begun a great variety of drugs, particularly sedatives, was prescribed.

Summary.

Acute porphyria is a serious, recurrent episode in the course of a chronic disorder of porphyrin metabolism. The specific diagnosis is made by the demonstration of the abnormal passing of porphyrins in the urine.

The disease is rare, yet possibly not so rare as the scarcity of reported cases would suggest, for in mild and latent cases the condition is not easy to diagnose unless special attention is paid to the examination of the urine. In this connexion the Watson-Schwartz test is valuable.

Two cases of acute porphyria are here described; both patients were young women. The outstanding symptoms were severe abdominal pain, pain in the limbs, insomnia, mental and emotional disturbances, tachycardia and loss of weight.

Both cases ended fatally. One patient died in the first recognized attack; there had been at least ten months' previous ill health. The other died twenty-three months after the first obvious attack.

One patient probably derived the porphyria by heredity from her mother.

Acknowledgements.

As this is the first report to be published under the auspices of the Queensland Institute of Medical Research it is fitting here to express appreciation of the action of the Government of Queensland, and in particular of the

Honourable T. A. Foley, Minister of Health and Home Affairs, in its establishment.

I am indebted to Dr. J. Coffey, Acting Director-General of Health and Medical Services for Queensland, for permission to quote the results of examinations made in the laboratory of the Department of Health and Home Affairs; to those clinicians who carried the responsibility of the care of the patients and who have freely made their notes available—Dr. J. Bostock, Dr. N. V. Youngman, Dr. A. D. D. Pye, and Dr. S. Julius of Brisbane, Dr. W. G. Livingstone of Murwillumbah, New South Wales, Dr. S. J. Minogue of Rydalmere, New South Wales, Dr. J. E. Alexander and Dr. W. C. Day of Gayndah, and Dr. R. S. McGregor of Maryborough; also to Mr. S. B. Watkins, M.Sc., and Miss M. Chalk, B.Sc., for assistance in the chemical examinations.

References.

(1) C. J. Watson and S. Schwartz: "A Simple Test for Urinary Porphobilinogen", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XLVII, June, 1941, page 393.

(2) S. Nesbitt: "Acute Porphyria", *The Journal of the American Medical Association*, Volume CXXIV, January 29, 1944, page 286.

(3) S. Nesbitt and C. H. Watkins: "Acute Porphyria", *The American Journal of the Medical Sciences*, Volume CCIII, January, 1942, page 74.

(4) F. G. Chandler, G. A. Harrison and C. Rimington: "Clinical Porphyrinuria with Report of a Case of the Acute Idiopathic Type", *British Medical Journal*, Volume II, December 16, 1939, page 1173.

(5) G. A. Harrison: "Chemical Methods in Clinical Medicine", Second Edition, 1937, page 216.

A NOTE ON THE USE OF PENICILLIN IN THE LABORATORY DIAGNOSIS OF WHOOPING-COUGH.

By Phyllis M. Anderson,[1]

From the Department of Bacteriology, University of Sydney.

During an epidemic of whooping-cough in 1941 it was shown that to swab the naso-pharynx of the patient and rub the swab on Bordet-Gengou medium was more convenient than the traditional cough plate method and gave reliable results in the bacteriological diagnosis of whooping-cough.(1) However, it was realized at the time that if only a few causal organisms were present their detection would be difficult, because faster-growing commensal organisms would also be picked up by the swab and would overgrow *Hæmophilus pertussis*. Fleming pointed out some years ago the value of penicillin in the isolation of *Hæmophilus influenzæ* from the throat,(2) and Maclean(3) adapted this method for the isolation of *Hæmophilus pertussis*. Both these workers used the crude broth filtrate, which had not at that time been standardized. Cruickshank in 1944(4) described a method of using standardized penicillin in the bacteriological diagnosis of whooping-cough.

The occurrence of an epidemic of pertussis in Sydney during the winter of 1945 provided an opportunity for testing such methods.

Technique.

Glycerol-potato-agar medium is prepared as follows.

Five hundred grammes of peeled potato are passed through a mincer and added to one litre of distilled water, then 40 millilitres of glycerin are added. The mixture is heated in the steamer for one hour. It is then placed in a press and the liquid is extracted. To each 500 millilitres of extract, 1,500 millilitres of 0·6% saline solution and 50 grammes of agar powder are added. The medium is then distributed in amounts of 80 millilitres in flasks, and sterilized by being heated in the steamer on three successive days.

Horse blood is collected with aseptic precautions, defibrinated and stored in tubes containing approximately 10 millilitres. Samples should not be more than three weeks old. Horse blood is recommended because hæmolysis of the horse corpuscles aids in the recognition of the pertussis colony.

A sterile stock solution of penicillin containing 10,000 units per millilitre is stored in the refrigerator. It can be used for three weeks. A fresh dilution in saline solution, containing 10 units per millilitre, is made when required.

The plates are prepared as follows. A flask of potato-glycerin-agar is melted and cooled to 45° or 50° C. To it are added 2·7 millilitres of the freshly diluted penicillin solution and 8 millilitres of defibrinated horse blood. The contents of the flask are well mixed and plates are poured, approximately 15 millilitres of medium being required for Petri dishes nine centimetres in diameter. Control plates of similar medium without penicillin are made. All plates are used on the day of preparation.

Plates are incubated aerobically at 37° C. in covered jars with moistened filter paper at the bottom, and observed after three, four and five days' incubation. Colonies of *Hæmophilus pertussis* are small, smooth and glistening, with a surrounding zone of hæmolysis.

Clinical Material.

By the courtesy of Dr. Blows, Out-Patient Registrar of the Royal Alexandra Hospital for Children, swabbings were taken from 154 unselected patients attending the whooping-cough clinic for the first time. A sterile fine wire swab (18 gauge copper wire with a looped end carrying a small dressing of cotton wool) was passed through the inferior meatus of the nose on to the posterior pharyngeal wall on each side. The swabs were rubbed first on a plate of Bordet-Gengou medium, then on a penicillin plate.

Results.

In the preliminary observations, on which was based the technique described above, it was found that pure cultures of *Hæmophilus pertussis* grew well on Bordet-Gengou medium to which had been added penicillin to give a final concentration of 0·3 unit per millilitre. When the concentration was raised to 0·5 unit per millilitre, the colony was smaller and hæmolysis appeared more slowly than on the penicillin-free medium. While a concentration of 0·3 unit of penicillin per millilitre of medium did not inhibit the growth of *Hæmophilus pertussis*, this amount was sufficient to suppress the growth of the normal flora of the naso-pharynx. The results of examination of 154 patients are shown in Table I.

TABLE I.
Results of Examination of 154 Patients.

Medium.	*Hæmophilus pertussis* Found.	*Hæmophilus pertussi* Not Found.
Bordet-Gengou medium	39	115
Bordet-Gengou medium with penicillin ..	79	75

These figures proved clearly the value of adding penicillin to the medium, and the appearance of the two sets of plates was just as convincing. Often there was practically a pure culture of *Hæmophilus pertussis* on the penicillin plate, a phenomenon never seen on the Bordet-Gengou medium. As might have been expected, if only a few colonies were present on the penicillin plate, the corresponding plate of ordinary medium gave a negative result, owing to the masking effect of the faster-growing normal flora.

Discussion.

The method described above differs in two respects from that of Cruickshank. He passes the swab through the mouth, behind the uvula to reach the posterior pharyngeal wall; in a young child I have found it easier to pass the swab gently along the inferior meatus of the nose to the same area. Also I have obtained more consistent results by incorporating the penicillin in the medium before pouring the plates than by Cruickshank's method of spreading it over the solidified medium.

---

[1] Work done with the aid of a grant from the National Health and Medical Research Council.

The bacteriological diagnosis of whooping-cough, so useful in the catarrhal stage of the disease when clinical diagnosis is impossible, has not come into general use in this country; but the introduction of the naso-pharyngeal swab into the clinic and the penicillin plate into the laboratory should remove the main objections to its establishment as a routine procedure.

Summary.

A method for incorporating penicillin into culture media for the isolation of *Hæmophilus pertussis* is described. *Hæmophilus pertussis* was isolated from 79 of 154 patients by means of the penicillin plate method, and from only 39 of them when ordinary medium was used.

References.

(1) P. M. Anderson: "A Note on the Cultivation of Hæmophilus Pertussis", The Medical Journal of Australia, Volume II, August 30, 1941, page 224.

(2) A. Fleming: "On Antibacterial Action of Cultures of Penicillin, with Special Reference to their Use in Isolation of B. Influenzæ", *The British Journal of Experimental Pathology*, Volume X, 1929, page 226.

(3) I. Maclean: *The Journal of Pathology and Bacteriology*, Volume XLV, 1937, page 472.

(4) R. Cruickshank: "Postnasal Swab in Diagnosis of Pertussis", *The Lancet*, Volume I, 1944, page 176.

◆

EPIDEMIC POLYARTHRITIS.

By P. G. Dowling,
Major, Australian Army Medical Corps.

Two small epidemics of a disease characterized by painful and swollen joints, a rash, mild fever and adenitis have been described in The Medical Journal of Australia. Halliday and Horan(1) gave an account of 105 cases among troops in the Northern Territory between November, 1942, and January, 1943. Sibree(2) reported 28 cases in a military unit in Queensland in late February and early March, 1944. The present report deals with a series of cases having similar features, which occurred among troops of an Australian division in North Queensland during February, March and April, 1945.

Distribution.

All the patients were members of military units which were in camps extending along both sides of a road for a distance of about seven miles. There were 94 patients in this area between February 26 and April 8, 1945; 86 of these were found in five units in close proximity to one another at one extremity of the area, 47 patients being examined in one unit alone. A distance of not more than three-quarters of a mile separated any two units of this group. Of the remaining patients, five were examined in units situated two to three and a half miles away from the above-mentioned group, and three in units five to seven miles away. Thirty-three of the patients were evacuated to a casualty clearing station, the remainder being treated in their own units.

Clinical Features.

The following description is based on the symptoms and signs presented by the 33 patients admitted to the casualty clearing station, supplemented by observations made in the unit in which 47 cases occurred.

Onset.

The onset was nearly always gradual, with pain on movement of the wrists, fingers and feet. Frequently the patients complained of "pins and needles" on using their hands or on walking. In some the shoulder joints, knees or ankles were first affected, while others first complained of lumbar backache. Mild headache, nausea and vomiting were early features in a few cases. One patient only complained of pain on movement of the eyes. In about half the cases a rash was present on the first day of the illness.

Arthritis.

Pain and stiffness in the joints were common to all patients. The pain was not severe, but was worse on movement. The joints of the hands and feet were most often affected, then the wrists, knees and ankles. Swelling in the region of the joints was observed in about three-quarters of the cases, the interphalangeal and metacarpo-phalangeal joints of the hands and the metatarso-phalangeal joint of the great toe being most frequently involved. Swelling of the wrist and ankle joints occurred also, and in three cases there was effusion into one knee joint. In all cases several joints were affected by pain or swelling; but the involvement was not necessarily bilateral or symmetrical. The joint swellings persisted for from four to seven days. Though pain usually disappeared a few days after the swelling had subsided, three patients complained of joint pain for three months after the onset of their illness.

Exanthem.

A rash was present in about nine-tenths of the cases. It appeared either on the first day of the illness or up to seven days later. It was usually first noticed on the trunk, and within a few hours had spread to the upper and lower limbs. Some patients displayed a generalized rash, the trunk, limbs, face and scalp being affected. The eruption was papular and discrete, except on the palms of the hands and the soles of the feet, where it was macular. In some instances the papules were large and sparse, in others small, numerous and closely set. They varied in diameter from one-eighth to three-quarters of an inch. When the rash first appeared, the papules and macules were usually bright red in colour, becoming a deeper red after twenty-four hours and gradually fading. The duration of the rash varied from two to seven days, the average being four days. In four cases small vesicles developed on the papules within twenty-four hours of the appearance of the rash, and these patients were first thought to be suffering from varicella. As the eruption began to fade in twenty-four hours and pain and swelling developed in the joints, the original diagnosis in these cases was seen to be incorrect. In five other cases the eruption on trunk and limbs was macular rather than papular and closely resembled that of rubella. Three patients complained that the rash was mildly irritable. In twelve cases reddening of the fauces was present, but there was no complaint of sore throat.

Fever.

In some cases no rise of temperature was recorded. The majority of patients had a mild degree of fever (temperature 99° to 101° F.), though in one case the temperature reached 103° F. and in another case 102° F. The pyrexia lasted from two to five days and subsided irregularly. The course of the fever in most cases ran parallel to that of the rash.

Adenitis.

About half the patients had mild tenderness and enlargement of the lymph glands. In some of these cases the cervical, axillary, inguinal and epitrochlear glands were involved, while in others only one or two groups were affected. The glands remained tender for three or four days.

Investigations.

In eight cases only throat swabs were examined, culture of pathogenic organisms from the blood was attempted, and total and differential leucocyte counts were made. From one throat swab a hæmolytic *Staphylococcus aureus* was isolated, but the other swabs yielded no pathogenic organisms. All the blood examined was sterile. The leucocyte counts gave normal results, the total number of cells ranging from 6,350 to 10,800 per cubic millimetre, the percentage of each type of cell being normal.

Disability.

Of the 47 patients examined in one unit, 36 were off duty for periods of four to fourteen days, and subsequently were free of symptoms. The remaining eleven patients had joint pains, mainly affecting the lower extremities, which persisted for more than two weeks after the onset. Their main disability was pain on walking. Three of these patients complained of painful joints for three months after the illness began. In reply to inquiries made in September, 1945, these three patients, who were then serving under tropical conditions, stated that on cool mornings they still occasionally had joint pain.

Treatment.

As the illness was mild, and as in most cases pain and swelling disappeared spontaneously within a few days, it was considered sufficient to keep the patient in bed during the febrile period and to provide rest for his affected joints. Analgesics such as aspirin appeared to relieve pain, but it was doubtful whether sodium salicylate had any beneficial effect on the course of the illness.

Discussion.

The patients in this series of cases were undoubtedly suffering from the disease tentatively named acute polyarthritis by Halliday and Horan. During the epidemic described by them I had the opportunity of seeing some of their patients and can state that there was close similarity in the clinical features and course of the illness in both outbreaks. Reviewing the article by Halliday and Horan, Megaw(3) comments as follows:

> This appears to be yet another of the short fevers that are cropping up in military camps in various parts of the world. Most of them seem to be more nearly related to dengue than to any of the other classical diseases. Information with regard to the epidemiology of the disease is scanty. The name acute polyarthritis is likely to suggest a more serious form of disease than that described, especially as there was no swelling of the joints in mild attacks in the present series.

The outstanding feature of this disease is the multiple joint involvement. In this series there was complaint of pain in all cases, and in the majority the affected joints were swollen. The swellings were periarticular in most cases, while in some effusions within the joint cavity could be demonstrated. It would seem, then, that the disease is correctly described as polyarthritis. The joint involvement is mild, but may sometimes be prolonged, though no cases of permanent disability have been encountered. This disease first attracted attention through the occurrence of sporadic cases in the Northern Territory, but its epidemic nature is now well established. It is suggested, therefore, that confusion with other and more serious forms of polyarthritis may be avoided by naming this disease epidemic polyarthritis.

In both the previous articles describing epidemics of this disease the writers have discussed its relationship to dengue fever. While admitting that there are some features in common, they point out that this syndrome differs in many respects from dengue fever, and conclude that it is a separate disease. I am in agreement with that view. Prior to and during the present epidemic no cases of typical dengue fever had been encountered among troops in the area. The differential diagnosis from rheumatic fever, rubella, glandular fever and varicella does not require repetition. The combination of joint involvement, a papular or macular rash and pyrexia suggested the possibility of a meningococcal infection; but the course was much milder, no recurrence of fever or rash has been observed, and no meningococci have been found on cultural investigation.

The ætiology and mode of transmission of epidemic polyarthritis are unknown. Search for an infecting organism has so far proved fruitless. Halliday and Horan were unable to obtain positive results in cultural investigations of blood, tonsils and naso-pharynx, urine and stools. Professor E. Weston Hurst(4) inoculated rabbits, guinea-pigs, mice and developing hens' eggs with defibrinated blood and citrated joint fluid from three patients in the Northern Territory "without producing signs of disease either clinically or on pathological examination".

Epidemics have now occurred in three successive "wet" seasons in northern Australia. The present outbreak began about two weeks after heavy falls of rain had converted into swamps much of the area in the neighbourhood of the five units in which 86 cases occurred. At the time the first patients "reported sick" it was noticeable that mosquitoes had become much more numerous since the heavy rain. Until about seven days after the first cases occurred, the majority of the members of the units involved did not sleep under mosquito-nets. Anti-mosquito measures were instituted, including the draining and oiling of pools, the spraying of tents and the use of mosquito-nets at night. The incidence of new cases declined rapidly after the first two weeks of the epidemic, the decline commencing about seven days after measures for mosquito control had begun. Captain W. D. Pryor made a survey of the larval and adult mosquitoes in two of the units most heavily affected, and in one unit five miles away, where only one case had occurred. *Culex fatigans* was the only species present in both larval and adult forms in all three camps. Other larvæ found included those of *Aëdes notoscriptus*, *Aëdes alboannulatus* and *Culex lutzia halifaxi*. Adult forms of *Anopheles annulipes* were found in two of the camps, and of *Culex lutzia halifaxi* in one. By far the greatest numbers of larvæ and adults found in all three camps were of the species *Culex fatigans*. Sibree records that culicine mosquitoes were present in the camp area in which his cases occurred. Owing to movement of troops from the area soon after the onset of the present epidemic, it was not possible to carry out any experiment to establish whether the disease could be transmitted by mosquitoes or whether this was the natural means of spread. Other possible insect vectors were considered, but none were prevalent in the area at the time.

The cases were scattered throughout the units concerned, and there appeared to be no evidence of spread by contact, or through the use of common tents, kitchens, mess huts or latrines.

It is of interest that the unit in which Sibree's cases occurred was, at the time of the present outbreak, situated about one mile from the group in which 86 cases occurred. This unit had moved into the area some months previously, but no cases of epidemic polyarthritis had been observed amongst its members since the epidemic of early 1944, nor did any cases occur during the present epidemic.

Acknowledgements.

I wish to thank Major A. E. F. Shaw for his assistance in the preparation of this paper. The Director-General of Medical Services has kindly granted permission to publish this article.

Summary.

1. An epidemic of 94 cases of epidemic polyarthritis occurring in North Queensland in the "wet" season is described.

2. The patients were suffering from the disease to which Halliday and Horan gave the name "acute polyarthritis".

3. It is suggested that "epidemic polyarthritis" is a more suitable name for this disease.

4. The ætiology is unknown, but the possibility that this disease is a mosquito-borne infection requires investigation.

References.

(1) J. H. Halliday and J. P. Horan: "An Epidemic of Polyarthritis in the Northern Territory", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, October 9, 1943, page 293.

(2) E. W. Sibree: "Acute Polyarthritis in Queensland", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, November 25, 1944, page 565.

(3) J. W. D. Megaw: *Bulletin of War Medicine*, Volume IV, April, 1944, page 476.

(4) J. H. Halliday and J. P. Horan: *Loco citato*, page 295.

Reports of Cases.

MOULDS IN THE LUNGS.

By J. B. CLELAND,
Marks Professor of Pathology,
University of Adelaide.

As several examples of the occurrence of the growth of moulds in the lungs have come under my notice recently, it seems worth while to record or recall the following cases of my own, in the hope that some other cases will also be reported.

Mycelium of a Mould in the Lungs of a Child.

A little girl, D.K., aged five years, was admitted to the Adelaide Children's Hospital on January 13, 1945, under the care of Dr. T. Grant, to whom I am indebted for the clinical notes. She was said to have suffered from whooping cough followed by bronchopneumonia, and was admitted to hospital with surgical emphysema of the upper part of the chest and neck. She had agranulocytosis on her admission to hospital, having received some sulphonamide drug. There was no response to penicillin, blood transfusions or injections of "Pentnucleotide". The child sank and died, the exact nature of the condition being in doubt.

Autopsy showed that in the posterior half of the upper lobe of the right lung there were consolidation and redness and a number of scattered circumscribed pale areas, one millimetre to one centimetre in size, which were firmer than ordinary abscesses, but did not look quite like tuberculous caseation. The lower lobe of this lung was also red with pale nodules, and some small, solid areas were felt in the anterior portion of the lung. The upper lobe of the left lung was mottled and pale, with scattered specks and larger pale areas. There was a little yellow exudate on the surface of the right lung. Cloudy swelling of the kidneys and liver was present, and the marrow in the shaft of the femur was red. Cultures prepared at the Children's Hospital yielded a growth of pneumococci, and those prepared at the Institute of Medical and Veterinary Science yielded a growth of *Streptococcus fœcalis*, a non-hæmolytic staphylococcus, a green zone streptococcus and a Gram-negative bacillus. In sections of the lung were seen large necrotic areas traversed by the large hyphæ of a mould. In the necrotic areas nuclear staining was lost. With the mould were some masses of dark granules, either cocci or foci of commencing calcification; these granules were numerous around the edge. Nuclear debris was also present. The hyphæ formed a dense, felted network in places. In the alveoli surrounding the mycelial areas was a shrunken pneumonic exudate, apparently consisting of altered fibrin with a number of mononuclear cells; evidently pneumonia had been present and the exudate had tended to organize.

Comment.

Evidently at some stage of the child's illness, either after the development of bronchopneumonia or as the primary cause of her illness, the spores of one of the higher fungi had been inhaled and had found a suitable medium in which to multiply and produce the large lesions that developed and evidently contributed materially towards the child's death. The house where the child lived was visited, and some of the rooms were found to be damp and mouldy.

Small Sclerotia in the Wall of a Bronchiectatic Cavity.

A male patient, aged seventy-four years, who died in the Royal Adelaide Hospital from intestinal obstruction (autopsy Number 109/44) was found to have a series of intercommunicating bronchiectatic cavities in the upper lobe of the right lung. The walls were smooth, and lining one was some whitish, crusty material, thought possibly to be a mould. The surrounding lung tissue was dense and fibrotic. Microscopic examination revealed, attached to the wall but not penetrating the tissue appreciably, several small, densely compacted, rounded or oval mycelial masses (sclerotia), staining deeply with the hæmotoxylin and readily seen with a hand lens, measuring about 260μ by 166μ or 170μ (rounded); the hyphæ round the edge were about 4μ thick (see Figure I).

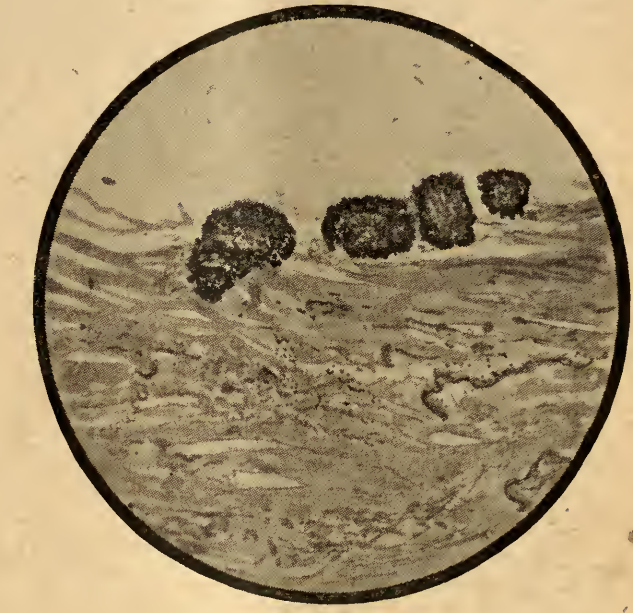


FIGURE I.
Drawing showing sclerotia in cavity of lung.

A Cavity in the Lung Containing a Large Compact Mass of Felted Mycelium.

This case was described in the *Medical and Scientific Archives of the Adelaide Hospital*, Number 11, for the year 1931, at page 14. The patient was a woman, aged twenty-three years, who had suddenly coughed up a large quantity of blood. The day after her admission to hospital she had a second sudden and severe hæmorrhage, and appeared to drown in her own blood. Five years previously she had also had hæmoptysis, and still another two years previously. A free mass, measuring about three inches by one and three-quarter inches in diameter (7·5 by 4·3 centimetres), was present, in a cavity in the upper and back part of the lower lobe of the right lung. The mass, which was surrounded with blood, easily fell out of the cavity in which it lay, and microscopic examination showed it to be composed of dense felted threads of fungus mycelium. This condition appears to be an entity, as Dr. J. B. Thiersch has shown me a similar specimen.

Aspergillosis of the Pleura with Sclerotium Formation.

This case, the patient being a returned soldier from the last war, was described in this journal on June 28, 1924. In this case the fungus was fruiting, and small, firm, brownish granules, about 1·5 or 2·0 millimetres in diameter and forming sclerotia, were present.

◆

Reviews.

NEUROSURGERY.

THE development and progress of neurological surgery during the past two decades is now well recognized. But to many it is synonymous with brain tumours only. To record its ever-widening field, Carl W. Rand has collected together in book form[1] his lecture clinics to students on some fifty-four different disorders. Written in simple conversational style, this book is easy to read and gives the general surgeon, general practitioner and senior student the basic principles of diagnosis, investigation and treatment on the wide variety of subjects in which neurosurgery has become helpful. In these aspects lies its chief value, as obviously a book of this size and extent could not deal with the material under review thoroughly enough for the neurosurgical specialist.

The book is divided into four major sections. The first section, called the spine, opens with chapters dealing with cases of *spina bifida* and cranium bifida, which includes varieties of encephaloceles. The Arnold-Chiari malformation and the mechanism whereby it results in the production of a secondary internal hydrocephalus are well explained.

The chapters on spine and spinal cord injuries which follow give a good summary of the different types of injuries which may occur and of the principles governing their treatment, but it is surprising that no plates illustrating methods of reduction and retention by plaster casts or Crutchfield's callipers *et cetera* are included. And surely the "valuable sign" for localizing the injured vertebra by flexing the head and neck, with the patient lying supine, until pain is experienced, as outlined on page 56, is extremely dangerous advice and contrary to the first-aid instructions of the next paragraph. The important and rarely recognized surgical emergency of spinal compression by an epidural abscess, metastatic from some staphylococcal infection, receives well-merited attention, and the chapter devoted to herniated intervertebral disks and associated lesions covers satisfactorily most aspects of their vexed and variegated problems in diagnosis and treatment as well as explaining their symptoms and signs. The concluding chapters in this section deal with cord tumours, whose common syndromes are well illustrated by histories of typical cases.

The second section dealing with head injuries is probably the best section of the book. Nearly every aspect of this important branch of neurosurgery is touched upon, including medico-legal and compensation problems. The author is a strong advocate of rest as the most important single measure in therapy, and whilst pointing out that no two cases are alike in this respect, he insists on rest in bed in hospital until the patient is symptom-free. He admits that the question of sedation is a difficult one, but he very rightly condemns the *pro re nata* ordering of morphine and advocates the barbiturates, paraldehyde and chloral, as far safer and more effective. On the other hand, most neurosureons would hesitate to accept his advice given on pages 144 and 145 when dealing with compound comminuted depressed fractures to "save the fragments, replace them and allow them to unite". Although skull defects are given high disability ratings in the industrial insurance world and with the laity, yet the chances of infection must be considered great despite the advent of sulphonamides and penicillin. The repair of skull defects is advocated and discussed, but no mention is made of the use of bone grafts from the inner table of the ilium, which have been used with such good results in this country by Pickerill, Money and others.

The differential diagnosis between the post-traumatic concussive state and the post-traumatic psychoneurotic state (hysteria and functional neurosis) is well discussed at some length, after the pathological physiology and histopathology of cerebral contusion have been dealt with in accordance with his colleague Courville's excellent work on these subjects. Subdural hæmatoma receives the attention it deserves in a separate chapter, but not all cases of this oft unrecognized condition can be dealt with succesfully by simple drainage. Post-traumatic epilepsy, fat embolism, pneumocephalus, arterio-venous aneurysms and enophthalmos are all given short chapters in this section, and finally attention is drawn to the various and interesting defects in the visual fields which follow certain cranio-cerebral injuries.

The third section, although called the brain, is devoted mainly to the various types of intracranial tumour, Cushing's and Bailey's pathological classification being followed. The author's remarks and advice upon the ill-fated *spongioblastoma* (*glioblastoma*) *multiforme* group of gliomata should be well digested by those contemplating neurosurgery. Attempts at their removal are always followed by failure, immediate or remote, and only bring disrepute to neurosurgery. More cases of these tumours have been incorrectly than correctly diagnosed.

The chapters which follow on pituitary tumour, acromegaly and Cushing's syndrome are well written and contain clear expositions of these fascinating syndromes; but, on the subject of treatment, most neurosurgeons would not agree with the last two sentences on page 362, namely: "We were told in no uncertain terms that the only reason we employed irradiation was because we were incompetent to perform a pituitary operation. That point of view has changed, and today the best clinics recommend primary irradiation in many types of pituitary tumour." Gliomata of the brain stem, porencephaly and colloid cysts of the third ventricle, though rare lesions, are well portrayed and the pitfalls in their diagnosis are stressed. In the chapter on glioma of the optic nerve, the lengthy discussion on contentious aspects of its histopathology, quoted verbatim from one of the author's monographs, is of academic interest only and could well be omitted. This section concludes with a chapter upon brain abscess.

The final section is a miscellaneous one, in which are discussed such diverse subjects as trigeminal neuralgia, phantom limbs, cervical ribs, torticollis, malignant exophthalmos, essential hypertension and sympathetic surgery for vascular diseases.

In the treatment of trigeminal neuralgia, indications for the various methods are well explained and some preference is expressed for medullary tractotomy as developed by Sjoqvist; whilst in the treatment of pain in phantom limbs, the injunction never to give morphine, as it always converts the patient into an addict, is heartily endorsed. In the final chapter, attention is drawn to coccidioidal granuloma of the central nervous system, a condition only recently recognized in the United States of America and not yet reported in Australia. It appears to represent, however, a definite clinical entity, which can be diagnosed by a skin test, akin to the tuberculin test in suspected cases of tuberculosis.

The book itself is excellently set out and printed on good art paper. The illustrations of specimens and the skiagrams are particularly well produced and appropriate to the subject matter. But their captions are in many instances far too lengthy and detailed, being repetitions of the text of the chapter concerned. Indeed throughout the book there is a lot of repetition, which could quite safely be omitted without the sacrifice of any of its teaching value.

As in most first editions, the text abounds in misprints and anomalies where the wrong side of a lesion or sign is given and dates are confused in case histories. Anatomical errors also exist. The soleus muscle referred to on page 70 should be the psoas muscle; on page 245 the posterior cerebral artery is called a branch of the internal carotid artery; and in the chapter on acoustic nerve tumours the petrous ridge is called the sphenoidal ridge in the text of figure 98.

The captions at the beginning of each chapter are unusual and pleasing features. Each one is an appropriate excerpt from some classical work or monograph upon the subject under review. In many instances, these references date back many years, even to Fothergill's work in 1784, and not only pay tribute to famous, though oft forgotten, authors, but also serve to prove the old adage that there is very little new under the sun. Indeed throughout the book the historical and personal aspects of the various diseases and conditions discussed receive full and timely honour, and a valuable list of references for additional reading is given at the conclusion of each chapter.

MASSAGE AND MEDICAL GYMNASTICS.

THE third edition of "Massage and Medical Gymnastics", by Mary V. Lace, is essentially a book for students in which the basic principles essential for a proper understanding of the reasons for the various exercises are clearly set out.[1] Massage, which can be learnt only by practical demonstration and constant practice, is limited to the first 36 pages. As Miss Lace points out in her preface to this edition, the purpose of the book is restoration of function. The importance of active and resisted movements rather than passive treatment is well stressed. The muscles and joints involved are enumerated, the exercises and the position of the gymnast are explained, and the effects and uses are clearly set out. The book is well illustrated, and this helps the understanding of the text. To have a proper understanding of the structures involved the student should study a standard work on anatomy in conjunction with this book.

---

[1] "The Neurosurgical Patient: His Problems of Diagnosis and Care", by Carl W. Rand; 1944. Springfield: Charles C. Thomas. 9" × 5½", pp. 588, with many illustrations. Price: $4.00, post paid.

[1] "Massage and Medical Gymnastics", by Mary V. Lace, with a foreword by James Mennell, M.A., M.D., B.C.; Third Edition; 1945. London: J. and A. Churchill Limited. 8" × 3½", pp. 255, with 126 illustrations. Price: 12s. 6d.

The Medical Journal of Australia

SATURDAY, FEBRUARY 23, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

AUSTRALIA AND SCIENCE: THE UNIVERSITY OF SYDNEY AND SCIENTISTS.

On Sunday, February 3, 1946, Professor Eric Ashby, of the University of Sydney, speaking as "Guest of Honour", gave over the National Broadcasting Network a talk which should be brought to the notice of every adult Australian. Professor Ashby has been away from Australia for over a year and has been attached to the Australian Legation at Moscow. He spoke of the interest shown by foreigners in matters Australian and also of their ignorance. Inquiries all had to deal with the intellectual life of Australia, the standard of education, the percentage of persons who received university training, the place taken by research in the life of the country, the presence of English students in Australia and so on. He pointed out that the people who gave Australia her reputation abroad were men of whom many Australians had not heard—a bacteriologist and a worker in wheat in Sydney, a biologist in Melbourne, a chemist in Adelaide, an historian, a medical man. People of this kind gave Australia her personality. At a meeting of the Society for Visiting Scientists in London Professor Ashby had heard a discussion on the organization of scientific work in Australia. The organization was described and some of Australia's accomplishments were mentioned. There were, however, a lot of "buts". One of them: "But the universities which in Britain are the springs of intellectual life, are [in Australia] so understaffed and overloaded with students, and criticized by fools, that they can't fulfil their proper function in the community." "Recently", Professor Ashby declared, "our stature as a nation has been greatly raised by our foreign policy and our diplomacy. But these alone are not enough. Before we can say we have a personality among nations we have a great decision to make. We must decide that we are no longer content to be the periphery of the intellectual life of the British Commonwealth; but that we shall be a centre, to which British students come, for some branches of knowledge and for some kinds of art."

We may take it for granted that no one will declare himself in favour of intellectual sterility for Australians, that no one in the Commonwealth will be content that Australians shall remain on the periphery of the intellectual life of the British Commonwealth. If Australia is to take her place at the centre, her people must live life to the full. This does not mean that Australians are to spend their whole time taking everything that life has to offer or can be made to provide for them. It means that they also have to make a contribution to the world's common fund of knowledge and to its accumulated store of culture. The contribution, moreover, will have to be commensurate with their endowment of gift and opportunity. It is not sufficient to be able to point to young men and women, beautiful physical specimens, bronzed by the sun and full of the joy of living, to glory in the feats of sailors, soldiers and airmen and in their devotion to the cause of freedom, or even to name with pride Australian scientists who in their thirst for knowledge and their search for truth have left our shores to achieve fame in the laboratories of other countries. To attain the objective of a full life Australia will need to pay more attention to education than she has done in the past; in so doing, moreover, she will find it imperative to use more discrimination, to adjust her sense of values in certain respects. The provision at universities of bursaries, exhibitions and "free places" is to be heartily commended. If any country is to develop and take its place beside others, the intellectual ability of its people must be given opportunity to develop. Those with the inclination and the necessary mental equipment to undergo scientific training should be allowed to follow their bent. This will result, and indeed has already resulted, in a great increase in the number of undergraduate students at Australian universities. The universities have to make provision for the greater call that is being made upon them. In making these provisions the universities have to be careful lest they think too highly of numbers—of quantity rather than of quality. It is quite simple to allow universities to degenerate to the level of technical schools where young men and women may take out licences that will enable them to follow this or that profession in life, where they may gain a veneer of knowledge that will allow them to pass for educated men and women. Universities should be seats of learning with two objects. The one is to turn out educated men and women with some ideas of citizenship, some sense of obligation to the community. The second is to foster the genius of the gifted student, to give him a chance to develop his talents, so that he will be able by study and research to add to the sum of knowledge. Students of this kind are the cause of the periodical moans in the daily Press when some Australian abroad has been responsible for or has had a share in a scientific discovery—"Why are these men not kept in Australia?" These are the men who will drag Australia from "the periphery of the intellectual life of the British Commonwealth" to the centre, if she is ever to reach that goal.

We may take it for granted that the controlling body of every university in Australia would, if faced with the question, agree that scientific subjects should be presented to students by well-qualified and trained experts in such a way that imagination will be awakened and enthusiasm aroused and that talented students will show their latent qualities. In other words, Australian universities, on paper at least, have opinions on the teaching of science to which no exception can be taken. But they do not always put their opinions into practice. In the present instance we wish to draw attention to an action of the University of Sydney which must appear to all reasonable people concerned with the "periphery" of science and its "centre" as absurd, if not unintelligent. A new lecturer in bacteriology is required at this seat of learning. An advertisement that appeared in *The Sydney Morning Herald* called for applications for a "senior lecturer". A senior lecturer in bacteriology must necessarily be a person of high qualification and of ripe experience. Readers of this journal do not need to be reminded of the enormous range of the subject, dealing as it does with microorganisms in relation to disease and with reactions of the body to their invasion. The subject is the basis of preventive medicine and of the practice of internal medicine. A clinician with a good knowledge of immunology and bacteriology is thrice armed in comparison with one not so erudite. A senior lecturer must be capable of doing any of the work of the department and of taking the place of the professor during his absence from any cause. He would probably have the oversight of the junior members of the department's staff and at all times will take a large part in the teaching of students. For work of this standard the university offers the handsome salary of £600 *per annum*. Presumably university superannuation will have to be paid for, and when the Taxation Department has taken its share there will not be a great deal left. The professor of bacteriology receives a salary of £1,500 a year. The discrepancy between the two salaries is far too great. We understand that all senior lecturers at the University of Sydney receive £600 a year. Apparently what always has been in the matter of lecturers' salaries must remain. To suggest that the members of the Senate of the University of Sydney do not appreciate the situation would be absurd. One can only conclude that they have no faith in the rightness of their convictions or in the destiny of the organization entrusted to their administration. Clearly a larger salary will not alone ensure the attainment of all that we look for in this or any other department. A larger salary would be, however, a good *point d'appui*. If the Senate is so timorous that it will not move in regard to all senior lecturers, it may recognize that bacteriology is a subject of enormous importance in the medical curriculum and may choose to appoint a reader in bacteriology rather than a senior lecturer. A reader would be more highly paid than a lecturer. This action would get over any difficulty of discrimination in the relative importance of subjects; but if it originated in the Senate it would not show any real appreciation by the Senate of the need to overhaul the whole of the staff arrangements. Some people think that there is inspiration in mottoes. If this is so, the members of the university as a whole might set about securing a change of the university motto: *Sidere mens eadem mutato.* In a new motto *mens eadem* might be dropped and a place found for *mens progrediendi cupida.* The *mens eadem* will remain at the periphery of intellectual life; the *mens progrediendi cupida* will turn to the centre.

Current Comment.

PORPHYRIA.

THE condition known as porphyria is one of the many interesting pathological conditions occasionally confronting the clinician which is not thoroughly understood. E. H. Derrick's description of two fatal cases, published in this issue, should not be passed by. These were cases of what is known as the acute idiopathic variety. Derrick, it should be noted, includes the idiopathic form with the so-called toxic form, consequent on the taking of certain sedative drugs, and labels the two as the acute in contradistinction to the other, congenital, type. Since in cases of the idiopathic variety the taking of drugs as a cause can seldom be excluded, the classification adopted by Derrick would seem to be preferable to that in which "toxic" cases are put into a third type. Derrick does well to lay stress on the acute attack, for, as he points out, mild and latent cases occur and may be easily overlooked. Further, the latent phase may be prolonged, as shown by one of Walderström's cases, which Derrick quotes. In these circumstances the discovery of latent porphyria becomes a matter of practical importance. The chief manifestations of the acute attack, Derrick reminds us, are: the passage of reddish-brown urine; severe abdominal pain, associated usually with nausea, vomiting and constipation; and symptoms referable to the nervous system. The involvement of the nervous system, if we may judge from two recent communications,[1-2] is a profitable field for study. Denny-Brown and Sciarra base their article on two cases. In the first case the condition was manifested as an acute and transient "toxic delirium"; the second was one in which the more usual form of delayed neuritis was followed by recovery and a second fatal attack occurred two years later. The history of the first patient is interesting from the point of view of diagnosis. On his admission to hospital the patient had slight fever; he had a leucocytosis and delirium. His urine was dark brown in colour and contained porphyrins. It was subsequently discovered that he had passed dark-coloured urine every second or third morning for about two years. Two weeks before his admission to hospital his urine had become darker than usual and had remained dark. There was a history of alcohol, and it is pointed out by Denny-Brown and Sciarra that the condition might have been an exceedingly brief and benign attack of *delirium tremens.* If this condition was present, the occurrence of an attack of porphyrinuria was a striking coincidence. About the second case there was no doubt. The patient was a white male, aged thirty-two years. In December, 1942, he was admitted to hospital suffering from pains and cramps in the upper part of the abdomen. On several occasions during his stay in hospital he suffered from general convulsions. The muscles of the limbs and trunk became weak and for a while the patient was unable to feed himself. The urine was persistently amber coloured. On February 6, 1943, the patient was discharged from hospital. On March 10, 1944, he complained of a sore throat and abdominal pain and cramps appeared once more. On March 13 he was admitted to hospital for a second time. The urinary output was diminished and the urine was amber in colour. On March 23 the patient became drowsy and general convulsions occurred. The muscles of the upper limbs became weak and the weakness gradually spread to both lower limbs and the trunk. The patient rapidly went downhill. All motor power was lost. The tendon reflexes and superficial reflexes were lost. There was a good response to touch and pin prick in all parts, but vibratory sense was diminished at wrists and ankles. A mechanical respirator was used for three days, but the patient became more confused and irrational and died in coma on April 7, four

---

[1] D. Denny-Brown and Daniel Sciarra: "Changes in the Nervous System in Acute Porphyria", *Brain*, March, 1945, page 1.

[2] Nathan Roth: "The Neuropsychiatric Aspects of Porphyria", *Psychosomatic Medicine*, September, 1945, page 291.

Akta-Vite

Nutritive Food Tonic

Each 10 grammes (approximately 2 teaspoonfuls) contains not less than:

Vitamin A	2,000 Int. Units
Vitamin B_1	300 Int. Units
Vitamin C	300 Int. Units
Vitamin D	1,000 Int. Units

Together with dextrose and calcium phosphate in a chocolate base.

- For the treatment of those vague conditions of sub-normal health—nervous exhaustion, sleeplessness, anorexia, gastro-intestinal atony with chronic constipation.
- In debility following severe illness, and for those cases where treatment necessitates restriction of the normal diet.
- During pregnancy and childhood.
- As a stimulant for sub-normal lactation.

In 5 and 10 oz. jars and 40 oz. tins.

NETT WEIGHT
10 OZS
AKTA-VITE
REG. TRADE MARK
NUTRITIVE FOOD TONIC
CONTAINING 4 IMPORTANT VITAMINS
A
B1
C
D
Nicholas Product
NICHOLAS PTY LTD MELBOURNE

A NICHOLAS ETHICAL PRODUCT

‘MYOCRISIN’

TRADE MARK BRAND

SODIUM AUROTHIOMALATE

in the treatment of Actinic Dermatitis

The value of aurotherapy in chronic dermatoses is not confined to lupus erythematosus, and a number of cases of actinic dermatitis have responded, apparently permanently, to a course of gold injections. These have ranged in severity from the patient who is unable to sunbathe, to the unfortunate individual in whom light sensitivity produces a condition of almost intolerable discomfort.

‘Myocrisin’ brand sodium aurothiomalate should be used in an initial dose of never more than 0·01 gramme, the amount given being cautiously increased, in accordance with the patient’s tolerance, to a maximum of 0·10 gramme. Usually, injections are made weekly until a total of 1 gramme has been given.

With adherence to low dosage and observance of precautions, any untoward reactions are usually mild and do not cause serious inconvenience.

M&B

SUPPLIES:

Ampoules of 0·01, 0·02, 0·05 and 0·10 gramme in aqueous solution and in oil suspension.

Manufactured by
MAY & BAKER LTD.

Distributors :
MAY & BAKER (AUSTRALIA) PTY. LTD. - - - - - - - SYDNEY, N.S.W

weeks after the onset of the final attack. During the last four days of life the urine varied in colour from a deep orange to a burgundy red, and was found on being tested to contain porphyrin. A long account of the post-mortem findings is given and photomicrographs of nervous tissues of different kinds are reproduced. The point that is at once obvious is that the pathological changes were patchy. As an example we note that the posterior tibial nerve in one segment appeared entirely normal except for mild œdema of one fasciculus. In other pieces the myelin showed patches of beading and irregularity associated with œdema under the perineurium. Cell stains of such areas showed mild proliferation of Schwann cells and endoneurial fibroblasts with slight perivascular accumulation of mononuclear cells. This patchy disorder of myelin sheaths was accompanied by some thinning and irregularity of staining of the axis cylinders; there was no interruption. There was an absence of fibrillary sprouting of regenerating axis cylinders. At one level nearly every fasciculus showed œdema with lifting of the perineurium. At the borders of an area of damaged myelin an occasional myelin sheath that was otherwise intact showed an isolated gap of about 0·1 millimetre in length. The characteristic appearances of Wallerian degeneration were absent.

Before Denny-Brown and Sciarra's views on the neurological changes are mentioned, some reference must be made to their remarks on their two cases. They think that the rapid recovery from severe delirium described in their first case is paralleled by the extraordinary recovery from a severe paralytic episode of the second patient who returned to his occupation in between his two attacks. In this regard the "mysterious illness" from which Derrick's first patient suffered before her final illness is of importance. Amongst the ten cases quoted in detail in Roth's report is the history of a woman, aged twenty-nine years, who in the five years preceding her final illness had three similar attacks, all characterized by depression, insomnia, excessive fatigue, abdominal pain and paralysis of the upper and lower limbs. In one of Roth's cases also, that of a woman aged nineteen years, an attack of acute porphyria was superimposed on what appeared to have been a condition of congenital porphyria. Denny-Brown and Sciarra also mention particularly the excretion of porphyrins in the urine. Waldenström recorded a case in which porphyrins were absent in some attacks and appeared at a later date; he therefore held the view that porphyrins as such played a relatively unimportant part in the development of symptoms. Denny-Brown and Sciarra point out that in their first case the continued excretion of porphyrins occurred after the burgundy colour of the urine had disappeared. In their second case colour was absent until a late stage in the patient's illness. Six of Roth's ten cases were examples of what has been called "porphyria without porphyrinuria". Roth points out that the porphyrins alone are not responsible for the unusual colour of the urine, since it is altered very little by complete extraction of the porphyrins. Various other pigments which have as yet not been definitely identified contribute to the unusual appearance of the urine. These are said to include melanin, skatole, urofuscin and urobilin. Roth also quotes Waldenström as having pointed out that the pigment may be present in the form of a colourless chromogen. The problem of the clinician, anxious to make a diagnosis, may thus be difficult, and this difficulty makes it necessary to lay special stress on the clinical manifestations of the condition.

In regard to the pathological changes in the nervous system, Denny-Brown and Sciarra point out that their findings are identical with the patchy and slight affections observed by others. "When it is realized that the nerve trunk proximal and distal to each patch showed degeneration of only isolated fibres, and in many instances no change at all, one of the most remarkable features of the affection becomes manifest." In trying to interpret their findings Denny-Brown and Sciarra point out that the gaps in myelin at the nodes of Ranvier in the nerve roots are very similar to those described by Denny-Brown and Brenner in segments of nerve rendered ischæmic by pressure. Such widening of the node is also found as an early stage of Wallerian degeneration, but the other signs of this degeneration, such as fragmentation of the axis cylinder, were absent. The changes in the posterior tibial nerve, moreover, present other characteristics of a more severe degree of ischæmic lesion. In an experimental ischæmic lesion in which axis cylinders are preserved intact there is no change in the electrical excitability of the paralysed muscles. Denny-Brown and Sciarra observe that in reported fatal cases of paralysis with porphyria (including their own) the total duration of paralysis is usually too brief for the reaction of degeneration to occur. The lesions of central white matter and of the nerve cells were comparable to the ischæmic lesions of the peripheral nerve. The changes in the dorsal root ganglia were as advanced as those in the nerve cells, but there was no impairment of general sensation. Denny-Brown and Sciarra's general conclusion is that the primary damage to the nervous system in porphyria is not a degeneration, but an impairment of myelin compatible with the occurrence of widespread, patchy and intermittent ischæmia. They think that the search for a vasoconstrictor substance present in the circulating blood may be profitable in determining both pathogenesis and treatment.

Roth has some interesting ideas on the causation of porphyria. He refers to views of Günther that congenital and acute porphyria occurs in persons who have a constitutional anomaly of pigment metabolism. Among the characteristics of the congenital variety is a neuropathic constitution manifesting itself by ready irritability; among the stigmata of the acute condition are nervousness, psychic depression and insomnia. Roth quotes Waldenström's view that acute porphyria may be inherited as a Mendelian dominant. It is, he holds, the constitutional anomaly which is held responsible for cases of so-called latent porphyria, in which individuals excrete abnormally pigmented urine over long periods of time without presenting other clinical signs or symptoms of the disease. Roth's ten case reports make interesting reading; in addition to the features of the condition already mentioned, he names others which he thinks require emphasis. The disease, he holds, occurs with special frequency, if not exclusively, amongst people with severe, neurotic personality disorders. "The patients usually appear to be hysterical, except in those instances where organic brain disease clouds the underlying features of the personality." In seven of the ten cases reported by him there was a history of major psychosis or serious personality deviation in one or more members of the last three generations of the family. In two of the remaining three cases there was no opportunity to inquire into the family history, so that the incidence of mental disease among the relatives of the patients might have been even higher. Roth thinks it probable that psychoneurosis plays an important part in the pathogenesis of the disease and in determining the time of onset of the acute attack. He points out that psychosomatic medicine is replete with instances in which emotional factors influence the course of metabolic disorders.

At the outset of his article Roth disclaims any intention to delve into the biochemical problems involved in the study of abnormal pigments, or to discuss in detail the signs and symptoms other than those of a neurological or psychological nature. The reader is left with the idea that Roth looks on the condition as having a psychogenic origin. It is not clear whether Roth regards this psychoneurosis as setting in motion action by porphyrin or other substance. He might even be prepared to agree that the activating agent was a substance something like that postulated by Denny-Brown and Sciarra. If this were so, he would probably differ in his conception of what happens during the process, for he refers repeatedly to the neurological change as a degeneration. Denny-Brown and Sciarra postulate an "impairment of myelin" which may be a distinction without much of a difference. The scope for future work on this subject is obvious.

Abstracts from Medical Literature.

PÆDIATRICS.

Some Problems of Neo-Natal Life.

S. G. Ross (*The Canadian Medical Association Journal,* May, 1945) discusses the mortality rate at the Royal Victoria Maternity Hospital in Montreal in the past forty years. During the first twenty years of the period there was a gradual reduction in neo-natal mortality, whereas in the past twenty years the mortality rate has remained almost stationary at about 4%. In a recent year prematurity accounted for 50% of the deaths. Other important causes, which are discussed by the author, are intracranial hæmorrhage and cerebral anoxia, hæmolytic anæmia of the newborn and hæmorrhagic disease of the newborn. Premature infants born of a toxæmic mother have a poor survival rate. The high incidence of intracranial hæmorrhage in the premature infant is well recognized. The structural weakness in the supporting membranes of the brain and the blood vessels themselves are the primary condition for this accident. There is delay in blood coagulation which favours the prolongation of bleeding from a torn blood vessel. This is the result of the relatively low concentration of prothrombin in the infant's blood. The causation is probably diminished liver function. It is therefore good practice to administer vitamin *K* intramuscularly at birth to all premature infants in an attempt to control intracranial hæmorrhage if present. Lethargy and feeding difficulties associated with icterus may be present in the premature infant. One or more daily hypodermic injections of glucose saline solution may be useful. The author finds that some infants do not gain satisfactorily on breast milk. This is frequently due to a deficiency of protein of which the premature infant's requirements are high. In such cases they supplement breast milk by the addition of calcium caseinate, using one tablespoon to four to six ounces of breast milk. Forty to eighty millilitres of blood plasma subcutaneously at suitable intervals have been of value where satisfactory progress is not made. The plasma is rapidly absorbed and supplies protein to the infant. The author discusses subdural hæmatoma, which may produce immediate symptoms or remain "silent" for weeks or even months. It should be suspected in the case of any newborn infant who shows signs of increased intracranial pressure with a bulging fontanelle, vomiting and increasing size of head. Unexplained bouts of fever, irritability and difficulty in feeding are frequent symptoms. The risks of indiscriminate pre-partum anæsthesia and analgesia and their effect on the occurrence of cerebral anoxia in infants are stressed. The author emphasizes the importance of early diagnosis in hæmolytic anæmia of the newborn so that prompt blood transfusions can be given. The incidence of hæmorrhage in this condition is discussed and is regarded by the author as being due to liver damage and the low prothrombin content of the blood. Adequate vitamin *K* therapy is advocated. Hæmorrhagic disease of the newborn is dependent on the prothrombin factor in the coagulating mechanism. Asphyxia of the newborn apparently is a factor in the reduction of the prothrombin content of the blood. Asphyxiated infants are more prone to hæmorrhage than normal infants. A possible explanation is that experimentally produced anoxæmia may cause liver damage. This might result in diminished prothrombin formation. An important factor may be a lag in the formation of vitamin *K* in the intestine of the newborn infant, which is dependent upon the intestinal microorganisms in the bowel. The author always gives vitamin *K* intramuscularly in doses of five milligrammes to all premature infants, asphyxiated babies, babies who are born after a hard labour, and babies with hæmolytic anæmia, as well as to all infants showing spontaneous bleeding or signs of intracranial damage.

The Treatment of Rheumatic Fever with Penicillin.

L. A. Rantz, W. W. Spink and P. Boisvert (*The Journal of Pediatrics,* June, 1945) have recently treated with penicillin six young male adults suffering from typical rheumatic fever. Salicylates were withheld in every case but one until the efficacy of the antibiotic had been evaluated. Penicillin was administered intramuscularly at four-hourly intervals, appropriately diluted in sterile normal saline solution. In addition, cultures were grown from the nose and throat in the usual manner before, during and after penicillin therapy. Hæmolytic streptococci isolated each time were grouped and typed by the precipitin techniques of Lancefield. Immunological studies were carried out on the serum obtained from the patients at frequent intervals. Leucocyte counts of the blood of the patients were determined at least twice a week. A series of sedimentation rate estimations of the erythrocytes was carried out at appropriate intervals, the Westergren technique being used. Serial electrocardiograms made during the illness of each patient were also recorded. The authors state that it is not possible from a study of six cases to evaluate the usefulness of penicillin in the treatment of a disease whose course is as variable as that of rheumatic fever. The results, however, strongly suggest that it is not only of no value, but also may be harmful. In the first case recorded, the result would appear to be excellent, but this was an example of a mild form of the disease. The clinical course of the other five patients during penicillin therapy was not satisfactory. A second patient improved in that the temperature became normal and the pericarditis and arthritis decreased in intensity, but he did not recover during a period of observation of sixty days; his disease was then promptly terminated by the administration of salicylates. The administration of penicillin was associated in the other four with a progressive increase in the severity of their disease. All patients remained febrile; in three, pericarditis appeared; and in two heart failure became apparent. The sixth developed a severe tachycardia. In every case the alarming clinical state was rapidly controlled by the administration of salicylates. It is not clear whether four of these six individuals suffered initially from a severe rheumatic fever which progressed unchecked by salicylates, or whether their disease was aggravated by the administration of penicillin. If this small group is compared with a much larger one treated conventionally during the same season it seems very probable that the latter hypothesis is correct. Interesting theoretical considerations are raised by the availability of an agent such as penicillin which is actively bactericidal for the hæmolytic streptococcus and its application to the treatment of rheumatic fever. Although a close relationship exists between infection, particularly of the pharynx and tonsils, by the hæmolytic streptococcus of Group A and the development of the rheumatic process, no convincing evidence has been presented which would demonstrate these organisms to be present in any of the affected tissues peripheral to the naso-pharynx. It has therefore been necessary to postulate the development of sensitivity of the tissues to products of the streptococcus as to the appearance of an abnormal antibody response developed by the individual in response to infection with these organisms. Penicillin, in the light of these facts, might not be expected to accomplish more in the rheumatic subject than the elimination of the causative type of hæmolytic streptococcus from the tissues of the naso-pharynx. This result was obtained in every instance in this study. Had their presence been important to the continued activation of the disease, improvement should have followed this event. Its failure to do so strongly suggests that the hæmolytic streptococcus carrier state is not related to the continuing rheumatic process. One other possibility remains. The destruction of large numbers of hæmolytic streptococci in the naso-pharynx may have flooded the patient with unusual amounts of bacterial products and thus have been responsible for the severe clinical course observed in these patients. This possibility suggests that a clinical trial of penicillin therapy, adequate to eliminate the hæmolytic streptococcus from the naso-pharynx of rheumatic subjects who were fully protected by salicylates, may be in order. Since the clinical response to salicylates is usually excellent, any advantage inherent in the use of penicillin could be determined only by the study of a large group with adequate controls.

Penicillin Treatment of Oral Inflammations in Childhood.

M. B. Marks (*The Journal of Pediatrics,* June, 1945) discusses the treatment with penicillin of three common and often severe inflammations of the mouth in infancy—namely, thrush, Vincent's angina and herpetic stomatitis. When these conditions are severe the usual armamentarium of drugs does very little in effecting an early cure. It is true that the old standbys, such as 1% or 2% solution of gentian violet, boric and peroxide irrigations, glycerite of boroglycerin, and sodium perborate, cure the vast majority of the simpler infections of this character in a reasonable number of days. However, in the severe or protracted cases of thrush or Vincent's infection, the usual treatment drags on for days and even weeks, wearing out the patience of both doctor and mother—and of the patient, too. It is in these instances that the use of penicillin is invaluable because of the rapidity with which it brings about an amelioration of symptoms. Penicillin may be used topically in dilutions of 250 units per cubic centimetre in young infants or older children when it is not desirable to carry out the injection technique. Although this method seems a little slower than the intramuscular route, the results are as good as those produced by it, and certainly the method is more effective than the former procedures of using dyes, oxidizing reagents, and mild and strong antiseptics. The intramuscular route should be preferred in the administration of penicillin, especially in severe cases. It is seldom that more than four or five deep injections are required, and these can all be given within a period of twelve to fifteen hours. From an experience in treating a number of infants and children with the oral lesions described, the author is convinced that penicillin now supersedes all hitherto employed remedies as being the most reliable and effective.

ORTHOPÆDIC SURGERY.

Osteoarthritis as an Orthopædic Problem.

A. M. Hendry (*The Practitioner*, August, 1945) considers that a reduction of the painful incapacity of osteoarthritis is one of the major problems of the orthopædic surgeon. The pathological processes of osteoarthritis are essentially degenerative and are the result of the wear and tear of joints by repeated small, actively produced traumata and by stresses and strains of long-continued use. Osteoarthritis affects chiefly weight-bearing joints and those used predominantly by occupation. It affects the elderly from prolonged use, the middle-aged and physically robust from excessive use. It appears at younger ages in joints ill adapted to withstand the effects of ordinary use, such as those affected by congenital abnormalities, and joints the surface of which have become distorted by gross trauma or earlier disease. Alterations in the line of incidence of stress and strain by *coxa vara*, knock knee, faulty alignment of fractures, bad posture and other causes of mechanical inefficiency, all tend sooner or later to its onset. The author considers that weight bearing is the chief exciting factor in the lower extremity, and occupational trauma in the upper limb. As the condition is degenerative, there is no power of recovery, but with adequate treatment progress may be arrested or at least retarded. Essentially mechanical in production, osteoarthritis demands mechanical treatment, both preventive and palliative. The valgoid feet of babies, static and postural deformities of childhood, all should be corrected early. In the treatment of fractures it should be recognized that rotation or angular deformities of even minor degrees upset the normal relationship of joint axes and are likely to be more harmful than greater degrees of opposition or overlap deformities. Local joint lesions, such as loose bodies, torn menisci and recurrent dislocations, should be treated early. The effects of such anatomical irregularities are obvious; less apparent, although of equal importance, are the errors of use of normal joints. Faults of weight bearing are widespread, and in themselves, as well as by augmenting occupational strains, are perhaps the most prevalent causes of osteoarthritis. The hip and knee are interrelated in weight bearing, flexion of one demanding flexion of the other. When full extension of the knee is not established, continued voluntary contractions of the quadriceps and glutei muscles are essential for the maintenance of posture. This leads to ready tiring, progressive weakness and an increasing lack of control of the joints. Body weight imparts a cross strain on a flexed hip and knee, which with a weakening control of the joint explains the high incidence of osteoarthritis is women, most of whom because of high heels or simply faulty habit fail to extend the knee fully on walking. Weakness of the quadriceps and gluteal muscles will lead to incomplete extension of the knee and hip. This is prone to occur from stretching or from disuse in relaxation in those whose occupation entails the maintenance of a flexed hip, knee and lumbar part of the spine for long periods, for example, miners, gardeners and heavy transport drivers. Similarly, almost every trade has its faulty posture or excessive use of certain muscles, so that the opposing muscles tend to become weak. A few minutes of each working hour should be directed to the performance of movements and assumption of positions opposite to those which the occupation demands. When clinical features of osteoarthritis become apparent, treatment may be by manipulation, external fixation or operation.

Air Arthrography in the Diagnosis of Torn Semilunar Cartilage.

E. G. Herzog (*The Lancet*, July 7, 1945) states that the air arthrography method of investigation has proved useful in the diagnosis of cases of unexplained, repeated or chronic effusions, and also in cases in which operation had previously been performed elsewhere, leaving residual disability or recurring symptoms. The results in twelve cases were as follows. In six cases a torn internal semilunar cartilage was diagnosed from the films and the diagnosis was confirmed at operation; in three of these the patients had previously been operated on elsewhere. In one instance a tear was diagnosed, but a normal cartilage was removed at operation. In one case in which a diagnosis of a tear was made, the patient refused operation. In four cases no lesion was shown in the arthrogram; the patients were written to after six to nine months and were found to be well and doing heavy work. The author adopted the following technique. The patient's leg was prepared as for operation and the procedure was carried out in the theatre under full aseptic precautions. A number 20 needle was inserted into the suprapatellar pouch after injection of a little "Novocain". Any effusion would have been aspirated, but in all these cases aspiration was unnecessary, since the effusion had subsided after preliminary treatment. Air, filtered through several layers of gauze, was injected with a 20-millilitre syringe fitted with a three-way tap. The quantities used varied between 60 and 120 millilitres, but the author considered it best to be guided by the distension produced and by the amount of pressure needed to push home the piston. A collodion dressing was applied and a *crêpe* bandage was used to compress the suprapatellar pouch and to increase the amount of air in the joint. With the patient lying on his side, the line of the knee joint was marked under the fluoroscope. This was considered important because the beam had to pass exactly along the joint line if overlapping in the radiogram was to be avoided. Further, since this line by no means always runs at an exact right angle to the long axis of the limb, it cannot be estimated without screening. With the tube horizontal and the central beam passing through the knee tangentially, three views were taken of the cartilage. The joint should be opened by abduction (adduction when the external cartilage is suspected) of the leg over a sandbag. If other joint lesions are suspected the usual three views of the whole knee joint can be taken, antero-posterior, lateral and intercondylar. A film showing the retropatellar space will disclose *chondromalacia patellæ* if it is present.

Treatment of Malunited Colles Fractures.

J. S. Speed (*The Journal of Bone and Joint Surgery*, July, 1945) concludes from a study of sixty cases of malunited Colles fracture, in which surgical procedures had been employed, that no one type of corrective procedure is applicable in all cases, but that the procedure must be chosen for each case, depending upon the exact lesion present. The first group was found by the author to include those patients in whom the deformity consisted chiefly of some dorsal tilting of the distal anticular surface of the radius associated with little or no radial shortening and with no appreciable involvement of the distal radio-ulnar joint. Such fractures were treated by simple osteotomy of the radius without internal fixation. In the second group were those cases of malunion with broadening of the wrist due to radial shortening and associated prominence of the ulnar head. Patients in this group were treated by osteotomy of the malunited radius at the old fracture site, and a resected oblique portion of the prominent ulnar head was utilized as a graft to maintain reduction of the fracture. In the third group malunion was more severe. Provided the distal articular surface of the radius was intact, patients in this group were treated by the use of a homogenous or autogenous intramedullary bone peg in order to maintain the reduction of the osteotomized radial fragments. In two cases in which internal fixation by means of an intramedullary peg failed to prevent recurrence of the deformity following osteotomy, the author used with success dorsal onlay grafts from the ulna. In the fourth group of patients in whom the radial fracture was situated close to the articular surface and in whom marked osteoporosis or severe comminution of the distal radial fragment was present, arthrodesis of the wrist was performed. In these cases resection of the distal end of the ulna was as a rule also necessary because of associated radio-ulnar disproportion and inferior radio-ulnar traumatic arthritis. The final group of patients had radio-ulnar traumatic arthritis only and were treated by subperiosteal resection of the distal end of the ulna. The author points out that, following surgical correction of a malunited Colles fracture, the surgeon must not be satisfied with an unstable reduction, for not infrequently recurrence of the deformity will take place in such cases. He advocates the use of some form of internal fixation, whether a bone peg or an inlay graft, in all but the simplest of malunions.

Medico-Legal.

HOCKING VERSUS BELL.

THE High Court of Australia on August 10, 1945, dismissed an appeal by Mrs. Stella Hocking, of Quirindi, New South Wales, against a judgement of the Full Court of New South Wales, which had by a majority verdict on August 3, 1944, set aside a verdict given by a jury in favour of Mrs. Hocking and had entered a verdict for Dr. Bell with costs. The verdict of the High Court was a majority verdict. The judgements of Mr. Justice Latham, Chief Justice, Mr. Justice Rich, Mr. Justice Starke, Mr. Justice Dixon and Mr. Justice McTiernan are published in full herewith.

The Judgement of His Honour Mr. Justice Latham, Chief Justice.

This is an appeal from an order of the Full Court of the Supreme Court of New South Wales setting aside a verdict for £800 for the appellant in an action claiming damages for negligence, and directing that judgement be entered for the defendant. The plaintiff, a married woman, claimed damages for negligence against the defendant, a surgeon, alleging that after performing the operation of thyreoidectomy he left part of a drainage tube in her neck, which remained in the neck until ultimately it came through the tonsil into the mouth some eighteen months after the operation. In the meantime, the plaintiff was seriously ill and suffered great pain.

There have been four trials before a judge and a jury of four. At the first trial there was a verdict for the plaintiff for £500. The Full Court set aside this verdict and ordered a new trial: see *Hocking* v. *Bell*, 42 S.R. (N.S.W.), 130. Leave to appeal from this order was refused by this court. At the second and third trials the jury disagreed, being evenly divided. After the third trial the defendant moved the Full Court for a verdict. The motion was dismissed: *Hocking* v. *Bell*, 43 S.R. (N.S.W.), 154, and a new trial was again ordered. At the fourth trial there was a verdict for the plaintiff for £800 and the jury made a specific finding in answer to a question submitted to them by the learned trial Judge. The Full Court unanimously set aside this verdict, and by a majority, Davidson and Halse Rogers, JJ. (Roper, J., dissenting) directed judgement to be entered for the defendant: *Hocking* v. *Bell*, 44 S.R. (N.S.W.), 468. It is from this order that the plaintiff now appeals to this Court. The trial lasted for 36 days, and the evidence given at the trial occupied nearly 1,400 pages of transcript. The testimony of the plaintiff and of witnesses for the plaintiff as to actual events was challenged by the defendant, and the expert medical evidence called by the plaintiff was also challenged. There was a conflict of evidence upon many matters.

In a trial by jury the jury is the constitutional tribunal for deciding issues of fact. As Lord Wright said in *Mechanical & General Inventions Ltd.* v. *Austin*, 1935 A.C., 346, at p. 373: "The appellate Court is never the judge of fact in a case where the constitutional judge of fact is the jury." Where there is a conflict of evidence it is not for the judge at the trial, or for any tribunal on appeal, to determine which witnesses should be believed—that is the responsibility of the jury.

If a verdict is against evidence and the weight of evidence, a new trial may be ordered. If the evidence on one side so greatly preponderates over the evidence on the other side that it can be said that the verdict is such as reasonable jurors, understanding their responsibility, could not reach, a verdict may be set aside and a new trial may be ordered. Caution is necessary in applying the principle that a verdict may be set aside if it is against evidence and the weight of evidence. That principle must not be interpreted in such a manner as to deprive the jury of its right of believing one witness on one side against twenty (or any number) of witnesses on the other side.

Setting aside a verdict is one thing. Entering a contrary verdict is quite a different thing. The giving of a verdict is the function of jurors, not of judges. Special provision, by statute or rules, is necessary in order to enable the court to go beyond setting aside the verdict of a jury and ordering a new trial and to enable it to direct a contrary verdict to be entered and to give judgement accordingly: see *Shepherd* v. *Felt & Textiles of Australia Ltd.*, 45 C.L.R., 359, *per* Dixon, J., at p. 379.

Under the judicature system in England, Order 58, rule 4, of the Rules of the Supreme Court permits the court upon appeal to draw inferences of fact and to enter judgement if it thinks fit, notwithstanding the verdict of the jury. This is a power which should be exercised "with considerable caution" and only "where the evidence is such that only one possible verdict could reasonably be given upon the evidence": *Baird* v. *Magripilis*, 37 C.L.R., 321, *per* Starke, J., at p. 334. But in New South Wales the judicature system is not in force, and the powers of a Full Court are less extensive. After a trial by jury the Full Court upon appeal has no power to draw inferences of fact; and though it may order a new trial where the verdict is against evidence and the weight of evidence, it cannot order a verdict to be set aside and judgement to be entered for the party against whom the verdict was given unless the conditions prescribed by the Supreme Court Procedure Act 1900, sec. 7, are satisfied. Sec. 7 provides that:

> In any action, if the Court in Banco is of opinion that the plaintiff should have been non-suited, or that upon the evidence the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order a non-suit or such verdict to be entered.

Thus, in the present case the Full Court could properly order a verdict to be entered for the defendant only if the defendant is "as a matter of law entitled to a verdict". If there is evidence upon which a jury could reasonably find for the plaintiff, unless that evidence is so negligible in character as to amount only to a scintilla, the judge should not direct the jury to find a verdict for the defendant, nor should the Full Court direct the entry of such a verdict. The principle upon which the section is based is that it is for the jury to decide all questions of fact, and therefore to determine which witnesses should be believed in case of a conflict of testimony. But there must be a real issue of fact to be decided, and if the evidence is all one way, so that only one conclusion can be said to be reasonable, there is no function left for the jury to perform, so that the court may properly take the matter into its own hands as being a matter of law, and direct a verdict to be entered in accordance with the only evidence which is really presented in the case: see *Shepherd* v. *Felt & Textiles of Australia Ltd.* (*supra*), *per* Starke, J., at p. 373:

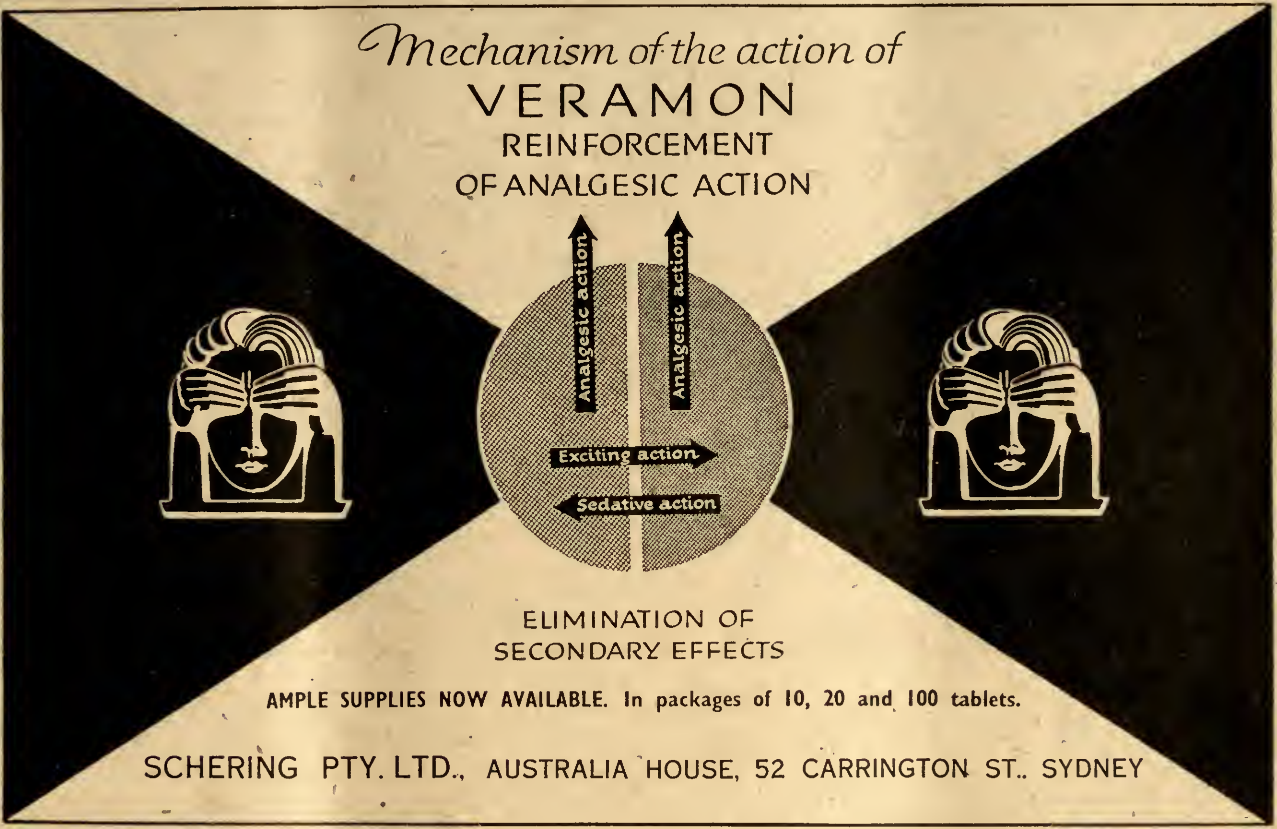
> Where on the uncontroverted facts the action or an issue must be determined in favour of one party, then, as a matter of law, that party is entitled to the verdict in the action or upon the issue. And it is necessarily wrong to leave any conclusion or inference in such circumstances as a question of fact to the jury.

Under sec. 7 the Full Court can never direct a verdict for the party upon whom the onus of proof lies (the plaintiff in this case) because the question whether or not the evidence for that party should be believed is essentially and necessarily a matter for the jury. But however great the preponderance of evidence may be in favour of the other party, the Full Court cannot on that ground direct a verdict to be entered for that party. In *De Gioia* v. *Darling Island Stevedoring & Lighterage Co. Ltd.*, 1942 S.R. (N.S.W.), 1, Jordan, C.J., expressed the rule which is applicable by saying that:

> . . . if the stage is reached that a *prima facie* case has been made out, the question whether the jury should accept that case, or should accept rebutting evidence called for the defendant, is one for them, no matter how overwhelming the rebutting evidence may be; and the trial Judge must leave it to them. If the jury find for the plaintiff, and the Full Court rules that the rebutting evidence is overwhelming, it is expressing the opinion that the defendant was, as a matter of fact, not of law, entitled to a verdict: *Wilton* v. *Leeds Forge Valley Co.*, 32 W.R., 461; *How* v. *London and North Western Railway Co.*, (1891), 2 Q.B., 496 at 500-1. It cannot, therefore, enter a verdict in his favour, but can only order a new trial.

See also *Huddart Parker Ltd.* v. *Cotter*, 66 C.L.R., 624, at p. 660.

There is sometimes great difficulty in distinguishing between a case of no evidence upon which a jury could reasonably find for a plaintiff (so as to justify entry of a verdict for the defendant) and a case of some evidence for the plaintiff but greatly preponderating evidence for the defendant (where a verdict for the plaintiff can be set aside and a new trial ordered but it would be wrong to direct a verdict for the defendant). Davidson, J., and Halse Rogers, J., refer to this difficulty in this case in 43 S.R. (N.S.W.), 154, at pp. 157 and 166 respectively. But this distinction, though difficult to apply in particular cases, is very real and important. The relevant principle was expressed in *Dublin, Wicklow and Wexford Railway Co.* v. *Slattery*, 3 A.D.,



Mechanism of the action of

VERAMON

REINFORCEMENT
OF ANALGESIC ACTION

ELIMINATION OF
SECONDARY EFFECTS

AMPLE SUPPLIES NOW AVAILABLE. In packages of 10, 20 and 100 tablets.

SCHERING PTY. LTD., AUSTRALIA HOUSE, 52 CARRINGTON ST., SYDNEY

Achieving Perfection in RADIOGRAPHY *with—*

ILFORD X-RAY FILM

Is the result of exacting scientific research conducted to produce a film combining chemical and mechanical qualities essential to radiographs of the highest possible diagnostic value. ILFORD X-RAY FILM gives delicate gradation and brilliant contrast with uniform quality.

ILFORD LTD., LONDON

Distributors:

WATSON VICTOR
LIMITED

9-13 Bligh Street, Sydney and at MELBOURNE, BRISBANE, ADELAIDE, PERTH, NEWCASTLE. WELLINGTON, NEW ZEALAND.

Tranquillity
with
TROPINAL TABLETS

LITERATURE ON REQUEST TO
HAMILTON
LABORATORIES LTD.
ADELAIDE, SOUTH AUSTRALIA

★ Each tablet contains Phenobarbital gr. 1/3; Caffein gr. 1/3; Atropine Sulphate gr. 1/300. For the treatment of Neurosis, Hyper-irritability, Migraine, Vomiting of Pregnancy, Climacteric Disturbances, Epilepsy, Sea and Air Sickness.

Wickham Head Lamp

This popular and effective Head Lamp is now standard equipment used by the Armed Forces.

Synthetic non-perishable cable, chrome-plated finish, and sound construction give an instrument of lasting use.

Plugs into standard Gowlland Battery Handles. Cat. No. 19.

Gowlland
electric diagnostic instruments

Made in England. Obtainable from all Surgical Supply Houses.

1155, by Lord Hatherley, who said at p. 1168 that he concurred with Mr. Justice Barry's opinion in the court below, namely "When once a plaintiff has adduced such evidence as, if uncontradicted, would justify and sustain a verdict, no amount of contradictory evidence will justify the withdrawal of the case from the jury". The question for the court is not a question whether the evidence for the plaintiff should be believed or not. In the last-cited case Their Lordships all agreed in this view and they emphasized the importance of maintaining that principle under a system of trial by jury. The headnote fairly states the decision :

> Where there is conflicting evidence on a question of fact, whatever may be the opinion of the Judge who tries the cause as to the value of that evidence, he must leave the consideration of it for the decision of the jury.

The judge must leave the case to the jury, because, however preponderating the evidence against the plaintiff may be in his opinion, it is a matter for the jury to determine what evidence they believe. All Their Lordships were of opinion that the verdict in the case under consideration was against evidence and against the weight of evidence, but nevertheless it was held that a verdict should not be entered for the defendant. Lord Cairns, L.C., referring to the distinction between the question whether a verdict was against evidence or the weight of evidence and the question whether there was no evidence which, if believed, would justify a verdict for the plaintiff, said at p. 1165 :

> . . . I have already said that your Lordships have not now before you the question of whether the verdict was against evidence, or against the weight of evidence. But I feel bound to say that if that question were now open, I should, without hesitation, be of opinion that a verdict more directly against evidence I have seldom seen.

Similar statements are made by Lord Penzance at p. 1181, by Lord O'Hagan at pp. 1182, 1185 and 1186. Lord Selborne, at p. 1187, says that the evidence must be left to a jury, however strong contradictory evidence might be by which it was met. So also Lord Blackburn, at p. 1203, said that he quite agreed "that it is not enough that the balance of testimony should be overwhelmingly on one side, and that therefore a verdict the other way ought to be set aside as unsatisfactory", and at p. 1216 he said, "in order to avoid all chance of misapprehension hereafter, I think it better to repeat that I do not think that the cogency or strength of the evidence in support of a disputed fact justifies the Judge in directing the jury to find it". He adds that where there is an admission, the judge is not only entitled, but bound to direct the jury to act upon the admission. Finally, at p. 1217 Lord Gordon says that "whether the evidence be strong, or conflicting, or weak, it is equally the province of a jury to decide upon it". See the references to the *Dublin, Wicklow and Wexford Case* in *Banbury* v. *The Bank of Montreal*, 1918 A.C., 626, at pp. 672-3. See also *Metropolitan Railway Co.* v. *Jackson*, 3 A.C., 193, at p. 207, *per* Lord Blackburn : "It is for the jury to say whether and how far the evidence is to be believed."

It may be, however, that, even though the plaintiff makes out a *prima facie* case, uncontested and indisputable evidence called by the defendant may be such as to provide an explanation which deprives the plaintiff's case of its *prima facie* effect, as in *De Gioia* v. *Darling Island Stevedoring & Lighterage Co, Ltd.* (*supra*). In such a case the position is that upon all the evidence a jury acting reasonably can only come to one conclusion, so that as a matter of law the party on whom the onus of proof does not lie is entitled to a verdict. But this exceptional case arises only where there is no conflict of evidence, so that the case falls within the general principle which sec. 7 embodies, namely that where there is really no question of fact for the jury to decide the Full Court may determine that, as a matter of law, one party is entitled to a verdict.

I have not referred in detail to the authorities which establish the proposition which I have stated, because they are very fully set out in the judgement of Davidson, J., in this case in 1943 S.R. (N.S.W.), 154. I particularly mention, however, *Ryder* v. *Wombwell*, L.R. 4 Ex., 32, and *Mechanical & General Inventions Ltd.* v. *Austin*, 1935 A.C., 346.

The principles stated must be applied in reference to the verdict actually given. In the present case the jury did not merely give a general verdict for the plaintiff for £800. The jury also answered a specific question submitted to them by the learned Judge. This question related to the basis of the plaintiff's claim, that is, the leaving of a piece of a rubber tubing in her neck after the operation, and the verdict of the jury must therefore be considered in relation to their finding upon the particular fact to which the question related. But the answer to this question must be regarded from two points of view : (1) In order to determine whether as a matter of law the defendant is entitled to a verdict, it is necessary to determine whether there was any evidence upon which the jury could reasonably find for the plaintiff the general verdict which the jury did in fact find. From this point of view the answer to the specific question submitted to the jury is not decisive of the case, because if there was evidence which would justify a verdict for the plaintiff with no reason given, the fact that the jury in effect gave (if it does give, as in this case) what may be held to be a wrong or unsupportable reason for the verdict (in the sense that it was a reason that reasonable men could not properly regard as such) would not entitle the defendant to a verdict. In such case the defendant could not be said, as a matter of law, to be entitled to a verdict, though he might have strong grounds for claiming a new trial. (2) Thus when the question is whether the verdict actually given is against evidence and the weight of evidence, so as to justify the granting of a new trial, then the particular reason assigned by the jury for its verdict as the ground of the verdict is a matter of great importance. If, in the present case, a reasonable jury properly instructed could not come to the conclusion stated in the answer to the question submitted to them there would be ground for ordering a new trial, because it would not appear that the verdict was not based upon the unsupportable reason.

There is one other matter to which reference should be made before entering upon a consideration of the evidence. The granting of a new trial is a matter of discretion. The court is not bound to grant a new trial in every case where it has the power to do so. In exercising the power to grant a new trial the court should consider all the circumstances of the case, including, in this particular case, the fact that several trials have already taken place.

I propose therefore to examine the evidence in the case for a particular purpose, namely in order to determine whether there was evidence upon which a jury could reasonably reach a verdict in favour of the plaintiff. I will also consider whether there was evidence upon which a jury could reasonably answer the specific question submitted to the jury by the learned trial judge in the way in which in fact the jury did answer that question. The object of the examination of the evidence will not be to consider whether a verdict for the defendant, if it had been given, could have been supported. There is no doubt that the defendant adduced evidence which, if believed by the jury, would have justified the jury in finding a verdict for him. He denied the allegations of the plaintiff as to the actual incident of leaving a part of the tube in the wound, and he adduced a most impressive volume of medical evidence which, if accepted by the jury, would involve a disbelief of other evidence given by the plaintiff as to her illness and associated incidents, and would involve also a disbelief of the medical evidence called on behalf of the plaintiff. The question is not whether the defendant's evidence is overwhelmingly stronger than that for the plaintiff, but whether the evidence for the plaintiff, if believed, including evidence as to any admitted or undisputed facts [see *De Gioia's Case* (*supra*)] is such that a jury could reasonably find for the plaintiff. The question before this Court emphatically is not a question whether the evidence for the plaintiff should be believed or not.

The plaintiff sued the defendant for damages for negligence. No negligence was charged with respect to the performance of the operation of thyreoidectomy. Particulars of negligence were given as follows :

> . . . the Plaintiff will allege that she was operated upon by your client in the lower region of the throat ; that a piece of drainage tube was inserted in the wound by your client and that this drainage tube was so negligently or unskilfully manipulated by your client that it broke and that your client thereafter negligently failed to remove the portion of the said drainage tube remaining in the wound with the result that the Plaintiff developed a complaint believed to be tetany in a very acute form—to such an extent that she was dangerously ill over a period of more than eighteen (18) months and that she only recovered from this illness on the passing of this piece of tube into the gullet whence it ultimately passed from the body *per rectum.*

It is not disputed that evidence that the defendant left a piece of tube in the plaintiff's neck is evidence of negligence.

The plaintiff gave particulars of the nature and description of the piece of rubber tube mentioned and, in particular, of the shape, size, length and colour thereof in the following terms :

> A piece of soft rubber tube about two inches long, greyish in colour, and had the appearance of having been in water for some time. It was cut off straight at one end and torn at the other. On the side was a straight cut in which could be seen what appeared to be a swab and wire protruding from torn end of tube.

The learned Judge at the trial submitted the following question to the jury :

> Did the defendant leave in the site of the operation the object substantially as described, that is, a piece of rubber tube about two inches long, cut off straight at one end and torn at the other, on the side a straight cut in which could be seen what appeared to be a swab and wire protruding from torn end of tube ?

When the jury returned into the court with a verdict for the plaintiff for £800, the foreman said :

> We have not answered the question in the words supplied by Your Honour but we have found certain facts on that particular question, the answers of which I have here.

The answer to the question was then handed to the learned trial Judge. It was in the following terms :

> We find : That the defendant left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which tube had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube.

The evidence adduced for the plaintiff consisted of the testimony of the plaintiff herself, her husband, and friends and acquaintances who saw her during her illness, and a nurse who nursed her at her home for some time after the operation, and of expert medical evidence given by Professor D. A. Welsh and Dr. G. S. Thompson.

Evidence was given that the plaintiff was in ill health in 1937. She had an enlarged thyreoid gland. She was examined by Dr. K. O'Hanlon at Quirindi on August 23, 1937. She was then treated by Dr. J. W. Flynn for giant urticaria and angio-neurotic œdema, which, as stated by Dr. E. P. Sloan in his book "The Thyroid" (1935), p. 120, are affectations which occasionally occur in goitre cases. She was treated in the Quirindi Hospital from October 19 to November 15. In a letter to Dr. H. J. Ritchie written on February 12, 1938, Dr. O'Hanlon describes her goitrous condition, stating that the thyreoid gland was very prominent, and that he thought she was thyreotoxic. Upon Dr. O'Hanlon's advice she consulted Dr. Ritchie on February 21, 1938, who diagnosed the case as one of thyreotoxicosis. Thyreotoxicosis is a condition produced by over-secretion of the thyreoid gland. It results in nervousness, hot flushes, palpitations, emotional disturbance, and sometimes protrusion of the eyes (exophthalmic goitre) and causes a loss of weight. Dr. Ritchie was of opinion that an operation was desirable, and he referred the plaintiff to Dr. Bell. Dr. Bell is a surgeon of extensive experience and with high qualifications. The plaintiff went into St. Luke's Hospital, and was prepared for the operation during a period of rest and treatment.

The operation took place on March 15, 1938. The operation involved the making of a horizontal incision at the base of the throat and a penetration of the structures overlying the thyreoid gland. The skin, the platysma muscle and the cervical fascia would be cut. The thyreoid gland lies behind the infrahyoid muscles (the sterno-thyreoid, the sterno-hyoid, and the omohyoid) and is overlapped laterally by the sterno-mastoid muscle. The infrahyoid muscles would be either separated or cut, the pretracheal fascia continuous with the sheath of the thyreoid gland and the capsule of the gland would be cut and so much of the thyreoid removed as was in the judgement of the surgeon necessary. Special care is taken in this operation to avoid damage to the parathyreoid glands which are small bodies about the size of half a split pea, varying in number, lying behind the thyreoid gland itself. The removal of the gland is a delicate operation because the gland is perhaps the most highly vascular part of the body, and a large number of blood vessels have to be tied in order to prevent hæmorrhage. The wound is then sewn up with catgut, the gland being first sewn, and then the various structures overlying the gland are rejoined by stitches as required, and finally the external portion, the platysma muscle and the skin, are sewn, generally with horsehair. In order to provide drainage of the wound a rubber tube is inserted into the place which had been occupied by the thyreoid gland. It is a common practice to cut a small hole in the tube towards the inner end to assist drainage. The tube may be inserted either before or after the stitching is completed. The defendant was not sure whether he finished stitching before or after the tube was placed in position. The doctor who gave the anæsthetic to the plaintiff had no recollection of the operation but said that the practice of the defendant, with which he was familiar, was to do some internal stitching after he had inserted the tube. The tube is removed within twenty-four to forty-eight hours after the operation. The tube lies loosely in the wound, but is prevented from slipping into the sinus, that is, the incision, by being attached to the skin by a horsehair stitch and by a safety pin through the external end of the tube.

The hospital records show a normal progress on March 15 and 16. On March 17 these records state : "Tube removed and 3 sutures. Less discharge. Condition good." The following is the plaintiff's account of the removal of the tube :

> . . . he (Dr. Bell) said the tube was not working and he would take it out so he loosened some stitches and pulled the tube in his fingers, shook the tube, and it did not come out and so he pulled a little harder and it still did not come so he put his hand on my forehead and held the head back firmly and pulled and whatever it was came out and he said "Damn" and I said "Oh". He held it in his fingers for a second and I saw it, just a little dark piece of rubber, then he threw it into the tray and he and the sister turned around and left the room. I had a stinging sensation in the throat. It stung very much there (indicating).

The nurse who was present when the tube was removed was not identified by any evidence. The progress of the plaintiff was then not as satisfactory as before. Sutures were removed from time to time, but the temperature of the plaintiff rose and there was a purulent discharge from the wound, together with swelling of the neck. The discharge continued until the plaintiff left the hospital on April 14, when she went home. Before she left the hospital she had a feeling of "pins and needles" in her hands and feet, and calcium lactate was prescribed by the defendant. "Pins and needles" are frequently the first sign of tetany, which is a condition involving spasms of the body, in which the muscles of various parts of the body become rigid, resulting sometimes in great pain. Tetany may be caused in various ways, but one cause is to be found in injury to the parathyreoid glands. These glands control the quantity of available calcium in the blood and a deficiency in such calcium brings about tetany.

When the plaintiff went home she still had the feeling of pins and needles, and she had cramps and severe pain in the feet and legs. Dr. O'Hanlon saw her on April 30 and on May 2 her husband wrote Dr. Bell a letter in which he stated that :

> The throat is not yet healed, she has taken out seven knots since coming home. It is not discharging so freely.
>
> The whole body has been much swollen until today. It seems slightly less swollen tonight.
>
> The tetany is still very annoying, but the attacks do not last quite so long.

Dr. Bell replied on May 4, stating that he had been speaking to Dr. Ritchie about the plaintiff and that Dr. Ritchie suggested that she should take calcium in the form of calcium gluconate.

She was treated by Dr. O'Hanlon, and, in accordance with his advice, again went into the Quirindi Hospital, and remained there from May 4 to June 9. On May 10 Dr. O'Hanlon wrote to the defendant a letter containing the following :

> There was a free discharge from her neck and she told me she had recovered several pieces of suture material. She had also been troubled very much by contractions in her forearms and legs and occasionally in her facial muscles. A few days after I first saw her I persuaded her to go into hospital where she is at present—there we recovered more catgut and with frequent foments to the neck there is less discharge and it appears to be generally better. However, the tetany is I think worse. Yesterday she had a very severe spasm involving practically her whole body, it was accompanied by so much pain that I was forced to administer a mild chloroform anæsthesia (not a very safe treatment I know—considering her condition) until a solution of calcium chloride 10% could be prepared for intravenous administration. I gave 10 c.c.'s of this solution, with remarkably rapid and good result, later in the day Mrs. Hocking said she felt well, but had the feeling that she was

> about to go into another spasm—however this has not occurred. I propose to give her a daily intravenous injection for a few days at least.
>
> When I first saw her on her return, I put her on to "Glucophos" because of its calcium gluconate content, but I have ordered some of the Sandoz preparation.
>
> Some text books regard post-operative tetany as being fatal very often—what is your opinion ?

The Quirindi Hospital records, together with the evidence of the plaintiff, show that the wound in the neck was frequently fomented, and was kept open in order to permit an effective discharge. Pieces of catgut came out from time to time. (Catgut lasts longer in pus than in healthy tissue.) The hospital records also show that the nurses were directed to watch carefully for and report any tetanic spasms, and several spasms are recorded. Intravenous injections of calcium chloride were given. The wound improved, but tetany spasms are recorded up to June 1. The records also contain references to swelling in the plaintiff's neck. On June 9 the plaintiff left the hospital and went home. The wound did not finally close until the end of June or the beginning of July. On June 29 the defendant wrote to the plaintiff's husband, saying that he was sorry the news was not better about the muscle spasms, and that he had informed Dr. O'Hanlon about some recent methods of treatment and had sent him up some special injections for him to use. During the succeeding months the plaintiff was treated by injections, sometimes of calcium and sometimes of paroidin—a parathyreoid extract. The medical evidence for the plaintiff and for the defendant was that this treatment was essentially a treatment for tetany. On January 17, 1939, Dr. O'Hanlon wrote to the defendant saying that the plaintiff was improving, and that the major attacks, though not less frequent, were becoming less severe, though she had frequent minor spasms which did not leave the muscles involved as sore as before. He reported that she was not able to tolerate the large doses of calcium lactate for more than a month or so, and that she was having occasional doses of paroidin and also of morphia. Dr. O'Hanlon saw the plaintiff in February, 1939. The plaintiff, her husband and Dr. O'Hanlon gave evidence that the latter stated that he could do nothing further for the plaintiff. He did not see her again until September, 1939. In the meantime her husband administered calcium and paroidin, sometimes by subcutaneous injections. On May 27 the defendant wrote giving the plaintiff his good wishes, and saying that he had been talking to Sir Alan Newton in Melbourne about a similar case and that Sir Alan Newton was a great believer in cod-liver oil and calcium—a treatment which had resulted in the complete recovery of some patients.

The evidence of the plaintiff, her husband and a number of friends and acquaintances, including Sister Sly, who nursed her for a time after she came out of the Quirindi Hospital in June, 1938, was that her neck was swollen from time to time. There was also evidence that her neck was sometimes swollen so severely that she had difficulty in turning her head, and sometimes had to move the whole body if she wished to look in another direction. The plaintiff and her husband also gave evidence that there was a continuance of the muscular spasms throughout 1938 and during 1939.

The plaintiff and her husband gave evidence that on October 2, 1939, she had a very violent spasm. Her evidence is as follows :

> . . . on the Saturday and Sunday I was constantly drawn up with the tetany spasms. My muscles never relaxed once. I was closely drawn. They would give a little and I could straighten in bed but sometimes my knees were drawn up. I was drawn up, round. My back was bent up round. On the Monday I was really very ill. Round about three o'clock I did not think I was going to live any longer. I had my neck so bad. My husband came home round about then—I could not say exactly what time—and I had a coughing fit. I seemed to be choking. I started to cough and I swallowed something.
>
> Q. : How was your mouth ? A. : I could not open or shut it. My teeth were not close together.
>
> Q. : You seemed to swallow something ? A. : Yes, and I took a terrific lurch and the muscles seemed to tighten up dreadfully hard. Something burst into the left side of my face. I felt something knock through, as it were. I felt a sensation like something bursting. I had something on my tongue and I swallowed it, whatever it was.
>
> Q. : What happened after that. What was your condition ? A. : I was still very ill after that for quite a while.
>
> Q. : Did you feel any sensation following that ? A. : I do not remember clearly, but I think next day I felt a sensation in the stomach. Of course I felt something going down my stomach. It went very slowly. It seemed to move down my stomach.

After October 2 there were no spasms.

Her husband gave purgatives to the plaintiff and on the following Thursday morning, October 5, she had a motion and she said that she saw something in the receptacle from the commode which she picked out in her fingers. She said that while she was emptying the receptacle she was startled by the approach of somebody coming and she dropped the thing into the pan, where it was taken away by the flush. On the next day she made a sketch of the article, which she said was not to scale, but was intended to show her husband what sort of thing it was which had passed through her :

> The thing I had in my finger, I would say a soft greyish piece of tube like a piece of rubber which had been in water for some time. It was swollen. It was not smooth like a new piece of tube.
>
> Q. : What about the shape ? A. : There was a straight cut at one end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish-looking stuff. It had come from this sponge and it looked like black wire, but when I bent it it would fly back straight. It was like horsehair, and it would fly back quickly straight. It looked like wire to me but it could not have been wire.

It may be mentioned that it was not suggested in cross-examination of the plaintiff or by any evidence for the defendant that the plaintiff had any knowledge of or familiarity with drainage tubes or the manner in which they might be cut.

Dr. O'Hanlon saw the plaintiff on October 6 and on October 7 he sent the plaintiff's sketch to the defendant with a letter in which he said :

> Mr. Hocking gave me the following history : Last Monday she had as bad an attack of tetanic spasm as she has ever had, she complained of pain in the neck which was swollen. Until Wednesday she complained of pain and soreness from the neck to the stomach, the act of swallowing was painful, he thought she had symptoms of indigestion and gave her castor oil, salts *et cetera*. On Thursday Mrs. Hocking had a bowel action and passed a piece of grey rubber tubing, squarely cut on one end and ragged on the other, the tube was partially split up and stuck in the lumen was what she took to be a small piece of marine sponge about which was twisted a piece of wire. I enclose the sketch she made for her husband and which he passed on to me. Mrs. Hocking emptied the tube along with the bowel action result into the W.C. so neither Mr. Hocking nor I saw it. Mrs. Hocking's description is too vivid for the article to be imaginary so of course I was somewhat nonplussed when I was asked to explain it all.
>
> Assuming that it was a piece of drainage tube that was accidentally left behind—I suppose it is possible that it could work its way into the œsophagus, though to me it seems strange that it did not work out through the sinus which persisted for so many weeks after her return from Sydney. Mrs. Hocking on a few occasions did complain of soreness in the neck, but at no time did I ever detect any symptoms that would indicate an X-ray examination—naturally the possibility of a foreign body being the cause never entered my mind. Within a month or six weeks after her return from Sydney her nurse did recover undissolved sutures on several occasions, the sinus eventually closed and now she has an excellent scar. The attacks of tetany have become fewer nevertheless, Mrs. Hocking is still far from well, she is very unsteady when she tries to walk.
>
> If a foreign body has remained in the neck all this time, do you think that it may be a possible cause of the tetany, and could we now expect an improvement in her general condition ? You understand, Doctor, that this question is based on an assumption only.

On October 11 the plaintiff wrote to the defendant saying that a piece of drain tube had been left in her neck and that it burst into her gullet so that she almost choked. The defendant replied on October 15, saying that he was sorry to hear that she had been ill again, that he had had a letter from Dr. O'Hanlon and had spoken to him on the telephone, and adding :

> It is difficult to explain your last illness and the "piece of drain tube" which you say passed by the bowel.
>
> I saw Dr. Ritchie during the week.
>
> I think you should come to Sydney for a medical investigation in order to see if we can advise some medical treatment to improve your health.

The plaintiff came to Sydney on October 26 and went into St. Luke's Hospital. She remained in the hospital until November 3. A blood test was taken by Dr. Tebbutt and it showed a calcium deficiency, the figure being 7·2 milligrammes per cubic centimetre, when the normal figure to be expected was 10. The defendant and Dr. Marsh, a highly qualified throat specialist, examined the plaintiff's throat, and she returned to her home. In November, 1939, Dr. Ritchie prescribed calcium gluconate for her.

The evidence to which I have hitherto referred is evidence of events alleged by the plaintiff to have happened. I come now to evidence consisting of expressions of medical opinion. Professor David Arthur Welsh, who was from 1902 to 1936 Professor of Pathology in the University of Sydney, gave evidence for the plaintiff. He had made a special study of the thyreoid and parathyreoid glands, but had had little or no actual surgical experience. He described the glands and explained that the parathyreoid glands regulate the calcium content of the blood by taking calcium salts from the bony skeleton, and that if the calcium content of the blood dropped below 10 there was latent tetany, and if much below 10 there was open and declared tetany. He said that if the parathyreoid glands were reduced in number or if their function was interfered with in any way by interference with the blood supply or if they were destroyed by suppuration or inflammation they could not perform their function of taking enough calcium to provide the requisite calcium content in the blood, and that the result was tetany. Inflammation about the thyreoid gland would, in his opinion, undoubtedly affect the functioning of the parathyreoid glands.

Professor Welsh said that the hospital records, referring to the discharge from the wound after the operation as "a thick purulent discharge", showed that some pus-producing bacteria had been introduced into the wound. The result was suppuration in the wound. The cramp in the fingers which was recorded on March 20, 1938, could be the very early development of tetany. If a piece of rubber had been left in the wound the effect would be to perpetuate the inflammation or suppurative process. Even if there were such a foreign body in the cavity, the wound could heal externally (as in fact it did). In his opinion the pus in the wound could travel anywhere in the neck, and gravity had very little influence in the neck, so that the pus might spread upwards, that is, in the direction of the tonsil. He said that the infection

> . . . usually spreads between the various structures in the neck, each little structure, each muscle and the thyreoid gland itself and a group of big important vessels in the neck are enclosed in what is called a fibrous capsule and the inflammation and suppuration usually spreads by separating these structures along their fibrous capsules, opening up the spaces between them, what we call the fascial planes. One has to imagine each little structure like a muscle or gland enclosed in a band or sheath of that fibrous tissue and the tendency of the suppuration is to spread up between these and of course to carry any foreign body with it.
>
> Q.: Would there be anything to prevent it going to the tonsil? A.: No, nothing serious to prevent it going to the tonsil.
>
> Q.: And would it necessarily on its way injure any blood vessel or muscle? A.: Not necessarily seriously injure any blood vessel or muscle. It might have taken a different course and seriously injured the blood vessel, but there is no history in this case that it did so.

This witness said that suppuration might result only in a thickening of fascial planes without any destruction of muscles, and therefore without any permanent effect in limiting the movement of the neck.

The plaintiff had given evidence that the thing which she had evacuated had something like wires sticking out of it and something like a swab in it. The defendant's advisers took a piece of tube and inserted wires and a piece of a swab in it, and the plaintiff said that it was a fair representation or a rough representation of what she had passed. This article, Exhibit "P", was two inches long with projecting wires extending another one and a half inches. Professor Welsh would not suggest that anything like Exhibit "P" with the wires in it could travel in the body.

He gave an example of a particular form of tubercular abscess, a psoas abscess, travelling between the fascial planes (that is, the membranous sheaths of the muscles) for a considerable distance in the body.

The opinion of Professor Welsh was that if there was a foreign body in the thyreoid there would be suppuration, and the function of the parathyreoids would be disorganized, with tetany as a result. He regarded the history of the plaintiff in the Quirindi Hospital as certain proof that she was suffering from true tetany due to calcium deficiency in the blood, and that her account of complete cessation of spasms after the eruption into her throat which she described was what could be expected when the cause of the tetany had been removed. As to the probability of the sudden disappearance of tetany when the cause thereof is removed, it is of some interest to note that in the Oxford English Dictionary sub "Tetany" there is a quotation from Allbutt's System of Medicine, 1899, p. 48: "The tetany spasms ceased the day after a tapeworm had been expelled."

He also gave evidence that some two years before the trial he had examined the left tonsil of the plaintiff, and had seen a distinct scar in the tonsil which indicated that some kind of "volcanic eruption" had taken place from the tonsil which was consistent with an abscess having burst out of that tonsil. He also said that the other tonsil was not anything like the left tonsil. He said that the condition of the tonsil indicated to him that there had been great disorganization of its structure, and that the area in which the scar appeared was sufficient to permit the exit of a tube such as had been described.

The opinion of Professor Welsh was that the thick purulent discharge showed that there was an infected suppurating wound, that the subsequent history showed spreading suppuration in the neck which began in the region of the thyreoid, and that ultimately there was an abscess in the left tonsil which burst.

The evidence of Professor Welsh was challenged in cross-examination, and some of it was contradicted by evidence called for the defendant. I am, however, at present considering only whether there was evidence for the plaintiff which, if believed, would justify a verdict for her.

Dr. G. S. Thompson, another witness for the plaintiff, appears to have extensive medical and surgical knowledge, but no special qualifications with reference to the thyreoid gland or the operation of thyreoidectomy. He gave evidence supporting that of Professor Welsh, stating that in his opinion the history of the plaintiff's case immediately after the operation, particularly in relation to her temperature, showed that the wound was infected. The hospital records showed a long continuance of that infection, the discharge not ceasing until July, 1938; the illness of the plaintiff during 1938 and 1939 was undoubtedly parathyreoid tetany; if a piece of tube were left inside the wound made by the operation, it could set up suppuration, as a result of which the tube could become located in an abscess in the tonsil. He gave evidence with respect to the anatomy of the neck, agreeing with witnesses for the defendant that the thyreoid gland was located in a particular compartment (the visceral compartment) of the neck which was separated by fascia from a (muscular) compartment containing certain muscles and another (vascular) compartment containing blood vessels *et cetera*. The compartment containing the thyreoid gland ended in its anterior upper portion at the hyoid bone and no suppuration could take a foreign body past that anterior portion of the compartment without some destruction of the infrahyoid muscles, but in the rear the compartment extended to the base of the skull. In Dr. Thompson's opinion it was possible for a piece of rubber tube to travel from the thyreoid gland to the tonsil—a distance variously estimated by witnesses at from about one inch to as much as five inches (and actually measured in court in the case of the plaintiff as being two and a half inches). Reference was made in evidence to the description in Cunningham's "Text Book of Anatomy" of the visceral compartment, and the statement therein as to the presence of loose areolar tissue and fat in the neck near the tonsil. The relevant references in the seventh edition are to pp. 1372, 1373, 1374. See also Jamieson, "Illustrations of Regional Anatomy", figure 50, and "Tonsil Surgery", by R. H. Fowler (1930), pp. 34 and 49, as to the tonsil lying in a bed of loose areolar tissue separating it from adjoining muscles. The quantity of connective tissue and fat varies with different individuals.

Dr. Thompson gave evidence that in his opinion the Quirindi Hospital records showed conclusively that the plaintiff had true tetany. He said that it was quite possible that the tube could travel from the neck to the tonsil without destroying any vital organs and that a psoas abscess provided an example of the travelling of pus in an abscess which illustrated in a comparable manner the effect of pus. He also was of opinion that the fact that the calcium content of the plaintiff's blood in October, 1939, was 7·2 milligrammes per cubic centimetre, instead of 10 milligrammes, supported the opinion that the plaintiff was suffering from tetany brought about by some interference with the parathyreoid glands. He said that he was unable to see any other explanation of the calcium deficiency. The hospital records showed that the plaintiff became unconscious on some occasions, and she gave further evidence of unconsciousness during spasms. In Dr. Thompson's opinion unconsciousness did occur in tetany in severe cases. He agreed with Professor Welsh that the wound might close notwithstanding the presence of a foreign body. He gave evidence that it was possible, if stitching were done after a tube was inserted in a wound, for a stitch to catch up the rubber so as to hold it.

Dr. Thompson examined the plaintiff's tonsil before the first trial and gave evidence that there was a punched out canal in the tonsil one-quarter of an inch in diameter and three-quarters of an inch long, and that this indicated that the tonsillar tissue had been killed in some way and had sloughed away. This hole was not the supratonsillar recess or fossa or any other of the crypts of the tonsil which appeared in a normal tonsil.

A great deal of Dr. Thompson's evidence was attacked in cross-examination and by contradictory evidence.

The plaintiff's case was that the inner end of the tube, at or about the small hole in the tube, was accidentally caught in a stitch; that the tube, possibly being somewhat perished, broke when it was being removed and that what appeared to the plaintiff, in a condition of exhaustion and distress, to be wire and a piece of swab, were pieces of catgut and a deposit of some kind within the body of the tube; that the illness of the plaintiff after the operation was explainable by the presence of the tube in tissues of the neck affected by suppuration, resulting in an abscess which ulcerated through the tonsil, the piece of tube having moved in the affected tissues and along fascial planes without permanently destroying any vital organs; that Dr. O'Hanlon and the defendant treated the plaintiff for true tetany and that she suffered from true tetany which could be explained only by injury of some kind to the parathyreoid glands; that suppuration within and about the capsule of the thyreoid gland would produce such injury; that such suppuration was established by hospital records and other evidence; that the sudden cessation of the tetany spasms was explainable by the sudden removal of the cause by the bursting of the abscess in the tonsil and the extrusion of the piece of tube; and that the calcium deficiency discovered in the blood in October, 1939, strongly supported this case.

I have already referred to authorities which establish the proposition that, wherever there is conflicting evidence, it is for the jury to determine what evidence they will believe, and that it is not the function of a judge, either at the trial, or upon an application for a new trial, or upon an application for a verdict to be entered against the party on whom the onus of proof lies, to act upon his own opinion that certain witnesses should be believed rather than other witnesses. If I felt at liberty to act upon my own opinion of the evidence I would regard the evidence for the defendant as overwhelming the evidence for the plaintiff. There are obvious improbabilities of high degree in the plaintiff's statement as to what happened when the tube was extracted, and upon other points the evidence of the plaintiff is plainly open to serious attack. (See the analysis of evidence upon the first trial in 42 S.R., 130, and upon the last trial in 44 S.R., 468.) Further, the qualifications of the medical witnesses for the defendant are much superior to those of the medical witnesses for the plaintiff. But these facts affect the weight and not the existence of the evidence for the plaintiff. It cannot, in my opinion, be said that if the evidence for the plaintiff which I have summarized was believed there was no evidence to support a verdict for the plaintiff. Accordingly, in my opinion, it cannot be held that, as a matter of law, the defendant is entitled to a verdict in this case.

It may be added that the evidence for the defendant provides instances of doctors differing and affords support for the plaintiff's case in certain particulars. I mention some examples. There was evidence by a witness for the defendant that there was a possibility—though only "a bare possibility"—of a tube being caught by an internal stitch and that a surgeon should guard against such a possibility. In general, the defendant's witnesses (and the defendant himself) agreed that suppuration, and infection, as well as trauma, could interfere with the effective operation of the parathyreoid glands and so produce tetany. One of his witnesses, however, was of a contrary opinion. The defendant's witnesses in general, though conceding that pus might travel almost anywhere, denied the possibility of a foreign body travelling from the thyreoid gland to the tonsil without serious destruction of organs of which they saw no signs. One witness, however, said that, though highly improbable, it was "a remote possibility", and another admitted that it was "a very vague possibility". Some evidence for the defendant was carefully limited to what was described as "anatomical possibility"—apparently as distinguished from pathological possibility—and the plaintiff was suffering from a pathological condition. Some of the defendant's witnesses were of opinion that the illness of the plaintiff after the operation was in the first place true parathyreoid tetany, but after about June the condition was not true tetany, but was a condition of hysteria, simulating tetany. It was not disputed that the plaintiff was in fact treated as for true tetany and not as for hysteria. The defendant's witnesses differed to some extent in selecting a point of time at which the true tetany ceased and the hysteria commenced. One witness for the defendant, however, was of opinion that the witness never suffered from true tetany, but was at all relevant times a victim of hysteria. I think I am right in saying that there was no evidence that hysteria would affect the calcium content of the blood. There was much evidence that the plaintiff did sometimes lose consciousness. The defendant's witnesses gave evidence that tetany due to parathyreoid injury was marked by the feature that the patient did not lose consciousness during spasms, while during hysteria consciousness might be lost on occasions. But these witnesses had to agree that a considerable number of leading authorities expressly stated, as Dr. Thompson had done, that in severe spasms of true tetany consciousness might be lost. Some of the witnesses for the defendant did not agree with statements or diagrams contained in what were admitted to be leading works of authority. I refer to these divergences of opinion as matters which a jury was entitled to take into account, though, as I have already said, if I had to determine the case according to my own opinion, I would have no doubt whatever in deciding for the defendant. It is, however, as I have already said, most important that a judge should not usurp the function of the jury, even if he regards the evidence against the verdict as most cogent, and indeed, overwhelming in character.

If, then, there was evidence upon which a jury might reasonably find for the plaintiff, it is immaterial (in determining whether a verdict should be entered for the defendant) that the jury answered in favour of the plaintiff the specific question which was asked, even though there might not be evidence to support the answer to that specific question. If the verdict had been against the plaintiff, then the plaintiff could not have claimed a new trial on the ground that a question to which she had not objected had been submitted to the jury. But even if there was no evidence to support the answer given by the jury to the question, it does not follow that a verdict should be entered for the defendant. The fact that there was no evidence to support that particular answer does not show that the defendant is entitled to a verdict as a matter of law.

But it is unnecessary for me to base my decision in this case upon the view which I have just stated, because, in my opinion, there was evidence which, if believed by the jury, can reasonably support the answer given by the jury to the question submitted to them by the trial judge. The answer to this question shows that the jury substantially believed the story of the plaintiff, however improbable that story may appear to be. The description of the piece of rubber tube is based upon the drawing made by the plaintiff, which is a remarkable feature of the case. The drawing shows what looks like a rubber tube with a "V" cut in it, the tube being torn across the "V" cut, with lines projecting which the plaintiff says looked like wire, "but of course were not wire". There was evidence that it was the practice to make a cut in the inner or distal portion of a drainage tube to facilitate drainage. The finding of the jury may legitimately be read, not as stating that there was actually wire in the tube or an actual swab in the tube, but that there projected from the tube some material which looked like wire and which looked like a swab. The jury, believing the plaintiff, only describes what the plaintiff said she believed she saw. As to the size of the tube, much evidence was given to the effect that the whole of a tube would not be longer than two inches, but there was also evidence that the length of tubes used varied from time to time, as would naturally be expected, and an illustration of a thyreoidectomy operation in a book used by the defendant's witnesses—Binnie's "Treatise on Regional Surgery", 1917, Vol. 1, p. 497—shows a tube in position, the visible projecting part of which appears to be considerably over an inch in length. Some evidence for the defendant admits that a tube used in a modern thyreoidectomy operation may be as long as two and three-eighth inches. The evidence for the defendant as a whole is that tubes used in such operations are practically never longer than two inches. But this question of fact was a matter for the jury, and the answer of the jury is "somewhat less than two inches". Thus, in my opinion, there was evidence to support the answer of the jury, though I should not have given that answer myself.

The Full Court of the Supreme Court had already decided on a prior occasion that judgement should not be entered for the defendant because in that trial there was evidence, though the court regarded it as highly improbable evidence, upon which a verdict could reasonably be found for the plaintiff. In his reasons for judgement on this last occasion Davidson, J., examining the evidence called for the defendant, expressed the opinion that it established that it was "anatomically and pathologically" impossible for a piece of the tube to travel from the position of the thyreoid gland to the tonsil, because vital structures would necessarily have been damaged in the course of such a passage. He was of opinion that the defendant's evidence supplied an explanation of the alleged hole or depression in the tonsil. I agree that there was very strong evidence for the defendant that it was impossible for a piece of rubber tubing to travel from the thyreoid gland to the tonsil without destroying important, if not vital, organs. But the evidence was in conflict on this point and also on the question of the existence and probable origin of the hole in the tonsil. It is for a jury, where there is a conflict of evidence, to say which evidence they will accept. This is not a case where, even if the evidence for the plaintiff is accepted, some other undisputed evidence for the defendant explains away the first apparent effect of that evidence, as in *De Gioia's Case* (*supra*) so that, when the evidence for the plaintiff is supplemented (not *contradicted*) by the other evidence, it can be seen that there is no evidence to support the plaintiff's case. This is a case of direct conflict of evidence. The conflict was extensive and vigorous. Whatever may be thought of the weight of the evidence given on behalf of the plaintiff, it cannot be described as a mere scintilla. That evidence was actually held by the Full Court to be more than a scintilla in the case of a prior trial (see 43 S.R., 154) and it is not suggested that any less evidence was given for the plaintiff at the last trial. But on this occasion it has been decided by the majority of the Full Court that there was no evidence for the plaintiff to go to the jury. It was said, quite accurately, that more evidence was given for the defendant at the fourth trial than at the previous trials. But more evidence for the defendant is not the same thing as no evidence for the plaintiff. No amount of additional evidence for the defendant can have the result of reducing the evidence for the plaintiff to zero.

His Honour Halse Rogers, J., pointed out certain divergences between the particulars given of the object evacuated by the plaintiff, and the finding of the jury. I agree with the view of Davidson, J., on this part of the case, that there is no substantial divergence between the particulars and the answer given by the jury. Halse Rogers, J., was of opinion that if the jury had returned a verdict for the plaintiff without any special finding the position would probably have been the same as upon earlier appeals to the court, but that the specific answer given to the question asked provided a distinction between this appeal and earlier appeals. I have already said that in my opinion there was evidence upon which a jury could answer the question as the jury actually did answer it. Halse Rogers, J., referring to the evidence as to anatomical and pathological possibilities, as to which there is a conflict, said : "On the worth of the conflicting statements the court itself must decide." It may or may not be that it would be better to allow judges to decide such questions, but, in my opinion, under the system prevailing in New South Wales a decision upon this question is necessarily for the jury, and not for the judges.

I summarize my opinion upon the question of entering a verdict for the defendant in the following propositions :

(1) The evidence for the plaintiff, *if it is believed*, is such that a jury could reasonably find a verdict for the plaintiff.

(2) The jury believed that evidence in substance, and found a verdict for the plaintiff.

(3) The majority of the Full Court was of opinion that *no jury could reasonably believe* the evidence for the plaintiff ; and this is quite different from an opinion that the evidence, *if believed*, could not reasonably justify such a verdict.

(4) The opinion that the evidence for the plaintiff could not reasonably be believed is not based upon a consideration of that evidence independently of any contradiction or qualification of it by evidence for the defendant, but is the result of a decision of the Full Court that the jury ought to have accepted the contrary and greatly preponderant evidence for the defendant.

(5) Thus the evidence for the plaintiff is regarded as being reduced to zero (or to "a scintilla"), not by reason of the character of that evidence itself, but as a result of the countervailing evidence for the defendant.

(6) Accordingly the conclusion that there is no evidence to support the plaintiff's case is reached on the ground that the jury should have resolved the conflict of evidence by accepting the evidence for the defendant as against the evidence for the plaintiff.

(7) The result is that the court has substituted its own opinion upon conflicting evidence for that of the jury. This procedure cannot, in my opinion, be justified under sec. 7 of the Supreme Court Procedure Act 1900.

Roper, J., while agreeing that the verdict was against evidence and the weight of evidence, and referring to the improbabilities of the plaintiff's story, said :

> Notwithstanding these improbabilities, two juries have each found a verdict which necessarily involves that they have accepted these aspects of the plaintiff's evidence as being the truth. Two other juries have each disagreed on the issues submitted to them.

He referred to the high eminence and special qualifications of the medical and surgical experts called for the defendant, and said that it was of preponderating weight, but that it could not be held to establish a case of scientific certainty. Accordingly, His Honour was of opinion that, although the expert evidence against the plaintiff was overwhelmingly strong, it could not be said that there was no evidence upon which the jury could find for the plaintiff, and that accordingly the proper order to make was an order for a new trial, and not an order directing a verdict for the defendant.

I agree with Roper, J., for the reasons which I have stated, that the Full Court should not have entered a verdict for the defendant.

The next question is whether the verdict should be set aside and a new trial ordered. The fact that, in the opinion of a judge, a verdict is against evidence and the weight of evidence, should not be regarded as necessarily requiring an order for a new trial. The court has a discretion in exercising its power to grant a new trial, and all the circumstances of the case should be taken into consideration. This is the second verdict for the plaintiff. The last trial was the fourth trial, and a new trial would be a fifth trial. The result of four trials is that 12 jurors out of 16 have found for the plaintiff. If a fifth trial is ordered, the result may be that again a verdict will be given which will be set aside, and the preservation of a consistent attitude by the court would then result in an order being made for a sixth trial. In my opinion it is proper to adopt the other alternative, namely, to allow the verdict of the jury to stand. I again refer to the all-important principle that it is the function and duty of the jury to decide questions of fact where there is a conflict of evidence, and that the fact that judges have a different opinion on questions of fact cannot justify the entry of a judgement notwithstanding a verdict, unless there really was no evidence upon which a jury could properly find for the plaintiff. It is only in such a case that the question for decision becomes "a matter of law" so that it may properly be determined by judges and not by the jury. The following cases illustrate the reluctance of a court to order a new trial where more than one jury has brought in verdicts, even though the court may disagree with those verdicts : *Goodwin* v. *Gibbons*, 4 Burr., 2018 ; 98 E.R., 100 ; *Swinnerton* v. *Marquis of Stafford*, 3 Taunt., 232 ; 128 E.R., 92 ; *Foster* v. *Steele*, 3 Bing., N.C., 892 ; 132 E.R., 654 ; *Foster* v. *Allenby*, 5 Dowl. P.C., 619 ; *Davies* v. *Roper*, 2 Jur. N.S., 167 and the note thereto.

In my opinion this litigation should be brought to an end by allowing the verdict of the fourth jury to stand, even though the members of this court may be of opinion that, if it had been their duty to decide the issues of fact involved they would have come to a conclusion different from that which has commended itself to the jury.

In the Supreme Court it was argued that the jury should have been directed that, because the allegation against the defendant could be regarded as a charge of misconduct which was criminal in character, the plaintiff's case must be proved beyond reasonable doubt. The learned trial Judge refused to give such a direction, and in my opinion rightly. I do not desire to add anything to the reasons stated by Davidson, J., in support of this view.

Objection was also taken to the conduct of plaintiff's counsel in criticizing the action of the British Medical Association and members thereof. As pointed out by both Davidson, J., and Halse Rogers, J., these references were provoked, at least to some extent, by counsel for the defendant. No application was made on behalf of the defendant for the discharge of the jury upon this or any other ground. In my opinion the learned Judge gave a direction to the jury which was sufficient to prevent the jury being misled as to the relevance of this or other matters.

I am of opinion that the appeal should be allowed, the verdict of the jury restored, and judgement entered for the plaintiff for £800.

The Judgement of His Honour Mr. Justice Rich.

This is an appeal from a judgement of the Supreme Court of New South Wales that judgement be entered for the defendant in an action for negligence. There have been in all four trials. At the first there was a verdict for the plaintiff, which was set aside on the ground that it was against the weight of evidence. At the second and third, the jury failed to agree. At the fourth there was again a verdict for the plaintiff. It is this which was set aside when judgement was entered for the defendant.

The case sought to be made on behalf of the plaintiff was that the defendant, who is a surgeon and had performed the operation of thyreoidectomy on her neck in March, 1938, negligently failed to remove from the wound a piece of rubber drainage tube, that this object moved about in the tissues of her neck, and that ultimately in October, 1939, it made its way through a tonsil into her mouth. She alleged that she suffered much illness and pain through its presence in her neck, from which she did not obtain relief until its removal.

For the defendant, it was contended in the Supreme Court that not only was the enormous preponderance of evidence against the plaintiff and in favour of the defendant, but that when the evidence given on behalf of the plaintiff was considered in the light of that given on behalf of the defendant no reasonable man could have regarded the former as sufficient to establish her case.

The evidence is lengthy, and has increased in snowball fashion as the result of the successive trials. I do not propose to analyse it or examine it in detail. I agree with the submission which has been made on behalf of the defendant that the plaintiff's story is so inherently suspicious and so highly improbable that it is difficult to understand how any jury could have accepted it. I agree also with the submission that the expert evidence called on behalf of the defendant was such that no one approaching it with un unbiassed mind could have failed to accept it, and to conclude from it that the alleged facts deposed to by the plaintiff not only did not happen but could not have happened. I feel no doubt about the cause of the miscarriage of justice which led to a verdict for the plaintiff. It was brought about by the deliberate raising of false issues by those who conducted the case on her behalf, and by the wholly unjustifiable vilification to which the defendant and his expert witnesses were subjected.

I feel no doubt whatever that the verdict cannot be allowed to stand. I equally feel no doubt that the order of the Supreme Court is the only one which will do justice, and should therefore be upheld unless some defect in the law of New South Wales prevents justice from being done. This is the only aspect of the case which has caused me any doubt. The question is as to the extent of the power of the Supreme Court of New South Wales to correct a miscarriage of justice in a judgement based on the verdict of a jury.

At common law, the verdict of a jury, and a judgement based on such a verdict could be set aside only in certain limited classes of case. In general it could be done only for a mistake in law. If it appeared on the face of the record that the judgment was erroneous in law, or if it appeared by a bill of exceptions attached to the record that the trial judge had made a mistake in law, the party aggrieved could maintain a new action, by a writ of error in the Exchequer Chamber, to reverse the judgement, and that Chamber would in a proper case reverse it and give the plaintiff in error any relief to which he was in law entitled, or direct a *venire de novo*, a trial *de novo*. A verdict of a jury could also be challenged otherwise than by proceedings in error. A *venire de novo* could be obtained from the Court in Banco for a defect in the verdict appearing on the face of the record; and a judgement *non obstante veredicto* could be entered for the plaintiff where the defendant had obtained a verdict on a plea which confessed and purported to avoid by matter which was no answer in law. A new trial would be granted by the Court in Banco for (*inter alia*) a material mistake in law of the trial judge to which objection had been taken at the trial. For a mistake of fact by the jury in returning a perverse or unreasonable verdict, the only remedy was a new trial. The Court in Banco had no power in such a case to substitute itself for the jury and itself make the finding of fact which in its opinion the jury should have made. In a case at common law which went to trial the parties were entitled to the verdict of a jury. A plaintiff could not be non-suited without his consent. The Court in Banco, if it set aside the jury's verdict, could not either enter a non-suit or enter a different verdict unless empowered to do so by a reservation made at the trial with the consent of the parties, actual or implied; it could at the most direct a new trial: *Heydon* v. *Lillis*, 4 C.L.R., 1223, at 1227; *Shepherd* v. *Felt and Textiles of Australia Ltd.*, 45 C.L.R., 359, at 379.

In England, the writ of error was abolished by section 148 of the Common Law Procedure Act 1852 (15 and 16 Vic., Ch. 76), and by the Rules of Court in the schedule to the Judicature Act 1873 (38 and 39 Vic., Ch. 77) it was provided by Order 58 that bills of exceptions and proceedings in error were abolished, that all appeals to the Court of Appeal should be by way of rehearing, and that that Court should have power to receive further evidence and should have power to give any judgement and make any order which ought to have been made, and to make such further or other order as the case might require. In its present form, Order 58 provides also that the Court of Appeal shall have power to draw inferences of fact. Order 58 applies to all cases, including those tried with juries: *Canada Rice Mills Ltd.* v. *Union Marine and General Insurance Co.*, 1941 A.C., 55, at 65-66. There have been dicta in the House of Lords suggesting that, in relation to a case tried with a jury, the language of Order 58 should be read in a restricted sense. I refer especially to *Toulmin* v. *Millar*. 12 A.C., 746, and *Mechanical and General Inventions Co. Ltd.* v. *Austin*, 1935 A.C., 346. In view, however, of the decision of the Court of Appeal in *Allcock* v. *Hall*, 1891, 1 Q.B., 444, and the observations of Lord Atkinson and Lord Parker in *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at 675-679, 706, I venture to think that the language of the order has the same meaning when read in relation to a case tried with a jury as when read in relation to a case tried by a judge alone. It confers on the Court of Appeal the same powers of correction in each case; and the dicta should be regarded not as showing that its powers are restricted in jury actions but as indicating considerations to which proper weight should be given when it exercises its powers; *Baird* v. *Magripilis*, 37 C.L.R., 321, at 334.

In New South Wales, proceedings in error do not appear to have ever been formally abolished, and section 226 of the Common Law Procedure Act 1899 still expressly empowers either party to tender a bill of exceptions in an ejectment action, but there is no reported case of proceedings in error since 1857: *Australian Trust Co.* v. *Berry*, 2 Leggo, 992. Rule 150 of the Common Law Rules now provides that applications for various forms of relief, which include those formerly obtainable by proceedings in error, shall now be by notice of motion; and it is provided by section 7 of the Supreme Court Procedure Act 1900 that in any action if the Court in Banco is of opinion that the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order a non-suit or such verdict to be entered.

In the result, although in cases tried without a jury section 5 of the Supreme Court Procedure Act 1900 confers upon the Court in Banco the powers conferred on the Court of Appeal by Order 58, in jury actions section 7 leaves the hands of the court still tied as they were in England three-quarters of a century ago, and as they have not been tied there since. It follows that the form of order made by the Supreme Court can be supported only if it could have been supported in England prior to the year 1873. It is highly anomalous that in New South Wales the Court in

THEELIN *per* VAGINA

Although sulfathiazole and sulfadiazine have been found effective in the treatment of gonococcic vulvovaginitis, the danger of sensitization of the patient with these compounds makes an œstrogen the drug of choice for the child.[1] Most physicians prefer to reserve the sulfonamides for the more serious diseases of childhood in which their use is imperative.

Available in small, conical-shaped suppositories for intravaginal administration, THEELIN produces temporary cornification of the vaginal epithelium, a favourable vaginal pH of 4·5 to 5·5, cessation of discharge, and negative smears for gonococci in two to four weeks.

Theelin Suppositories (Vaginal) contain 0·2 mg. Theelin in a glycero-gelatin base. Available in boxes of 6.

[1] Compton, B. C., Bieren, R. E., Jones, E. G., Inloes, B. H., Jr., Kardash, T., and Hundley, J. M.: "Treatment of Gonococcic Vulvovaginitis", *J.A.M.A.*, 127: 6 (Jan. 6), 1945.

THEELIN

Vaginal Suppositories

Parke, Davis & Company, Limited
(INC. U.S.A.)
SYDNEY

delicate condition at that time and any violence would break the wound down and tear the muscles or the tissues to which the stitches were attached and cause intense pain. And there was no practical difficulty in removing the broken tube. The wound had not healed and the patient could have been taken up to the operating theatre in proper sterile surroundings and the tube removed, using at most a little anæsthetic in the skin. True it is that a medical witness called for the appellant said that it would have been madness to go after the tube in the circumstances then existing, but fortunately that statement has little relevance to the case and is quite opposed, as experienced surgeons indicated, to elementary surgical principles. And the story is quite inconsistent with the report kept by the nursing sisters in the hospital. There is an entry on March 17: "Tube removed and three sutures". It is true that the nursing sister who was present when the tube was removed could not be identified, but Sister Will (now Helen Melville), who signed the report, stated the routine and the duties of the sisters. "The theatre (that is, the operating theatre) people say that the tube was put in and we have to see that it comes out. When the tube is removed, the sister with the doctor brings it to another sister, preferably the senior one, just to look it over and get it checked, to check that it is out of the wound. It goes into the report after the checking." And finally we find that Dr. Bell was in daily attendance on the appellant after March 17—and this is confirmed by the nursing sisters' reports—probing the wound to keep the drainage track open and dressing it himself or satisfying himself that the sister had carried out his instructions. All this conduct is inexplicable if any portion of the drainage tube remained in the wound to the knowledge of Dr. Bell or any of the nursing staff. The stinging sensation in the throat to which the appellant above referred she felt on the left side. And it is also important in the history of the case to observe that the appellant said that she had twitchings in her hands, pins and needles in the hands, which, according to medical evidence, is indicative of tetany. And tetany, also according to the medical evidence, is due to some disturbance of the parathyreoids in the course of an operation on the thyreoid gland and possibly also to inflammation set up by infection.

On March 16 the patient's temperature rose, and continued high until March 20, but gradually subsided. On March 20 "some thick purulent discharge" was expelled, and from that day onwards to the date of her discharge from hospital on April 14 some purulent discharge was noticed, though on April 12, according to the nursing report, the discharge was much less.

The appellant returned to her home in Quirindi, which is a considerable distance from Sydney. On April 30, 1938, she was seen by Dr. O'Hanlon, who found that the wound had healed except for a small sinus in the centre of the scar on the throat which was discharging freely sero-purulent matter, and round about the sinus there was definite inflammatory swelling. On May 14, 1938, he sent the appellant into the Quirindi Hospital, where he attended her. The wound was probed, kept open, and foments were applied. On May 9 the appellant was not so well, and according to Quirindi Hospital reports she had tetany spasms, and others on May 17. On May 10 Dr. O'Hanlon had reported to Dr. Bell that there had been a free discharge from the appellant's neck, that several pieces of suture material had been recovered, that after treatment with foments there was less discharge and she seemed generally better, though he thought the tetany worse, and he stated his treatment of the appellant. But the appellant at or about this time did not inform Dr. O'Hanlon or any of the attendants of the hospital that any tube had been left in the region of her throat. On June 9 the appellant was discharged from the Quirindi Hospital.

A nursing sister—Sister Sly—however, returned with the appellant to her home and remained with her for some five or six weeks. The wound in the appellant's neck had not quite healed when she reached her home, she suffered from spasms, her face and neck were very puffy and the hands were a little puffy. During this period the neck improved and, when Sister Sly left in July, the wound had completely healed and was not suppurating. Dr. O'Hanlon also saw the appellant frequently after her return to her home. And he states that all swelling round the neck had disappeared and the sinus had completely closed. But on June 27 the appellant had another spasm, which recurred.

On September 3, 1938, the appellant was readmitted to Quirindi Hospital in a tetany spasm, and she had another on September 4, 1938. Dr. O'Hanlon attended her and she was discharged on September 7, 1938. Dr. O'Hanlon continued to attend the appellant until about October, but did not again visit her until February, 1939. In January, 1939, in response to an inquiry of Dr. Bell, Dr. O'Hanlon reported that the appellant was improving slightly, that the major attacks, though not less frequent, were becoming less severe, and that she recovered more quickly, that she had frequent minor spasms which did not leave the muscles involved as sore as before. He added that the appellant looked well and that he could not help thinking that there was a big functional element in her trouble. On October 6, 1939, Dr. O'Hanlon was called to see the appellant, and her husband stated that on the previous Monday she had a severe tetanoid spasm—as severe as ever experienced. But let the appellant herself again take up the story, but not forgetting that the appellant is now speaking of an event that is said to have taken place some eighteen months after the operation and the removal of the drainage tube.

> Q.: What is the date of your birthday?
>
> A.: October 2 (1939).
>
> Q.: Do you remember something happening about that time?
>
> A.: Yes, for a while before that date.
>
> Q.: That was your birthday. What happened?
>
> A.: I was really seriously ill for quite a while before then. With the swelling in my face and neck and shoulder and my back. Well I looked like a hunchback, so swollen at the back of the shoulder and my neck was terribly swollen and my face and my eyes were almost closed. I had difficulty in breathing. I breathed mostly with my mouth open. I had a very nasty taste in my mouth like bad teeth or pus coming away.
>
> Q.: Round about your birthday do you remember something happening? Did you have any spasms?
>
> A.: Yes, on the Saturday and Sunday I was constantly drawn up with the tetany spasms. My muscles never relaxed once. I was closely drawn. They would give a little and I could straighten in bed, but sometimes my knees were drawn up. I was drawn up round. My back was bent up round. On the Monday I was really very ill. Round about 3 o'clock I did not think I was going to live any longer. I had my neck so bad. My husband came home round about then. I could not say exactly what time, and I had a coughing fit. I seemed to be choking. I started to cough and I swallowed something.
>
> Q.: How was your mouth?
>
> A.: I could not open or shut it. My teeth were close together.
>
> Q.: You seemed to swallow something?
>
> A.: Yes, and I took a terrific lurch and the muscles seemed to tighten up dreadfully hard. Something burst into the left side of my face. I felt something knock through as it were. I felt a sensation like something bursting. I had something on my tongue and I swallowed it whatever it was.
>
> Q.: What happened after that? What was your condition?
>
> A.: I was still very ill after that for quite a while.
>
> Q.: Did you feel any sensation following that?
>
> A.: I do not remember clearly, but I think next day I felt a sensation in the stomach; of course I felt something going down my stomach. It went very slowly. It seemed to move down my stomach.

The appellant took aperients and used a commode. The story goes on:

> Q.: What did you do?
>
> A.: I went back to bed after using the commode.
>
> Q.: After some rest, what did you do?
>
> A.: I rested quite a while. Then I got up and took the pan from the commode, and as I was taking it out in the light of the verandah I noticed something in it. I picked it out in my fingers. It was quite a startling looking thing. I took it out and squeezed it and as I did so a yellow-greenish pus ran down my fingers. I was holding it up in my left hand and I heard someone coming. I picked up the pan and went to tip it into the toilet. As I did I pulled the ring across my fingers so (indicating), that is the chain, and of course I am left-handed so to speak and I dropped this. I was leaning against the wall holding this in my finger, and with the nervousness it dropped out. The water was running as it hit the piece of tubing.
>
> Q.: What happened?
>
> A.: Well, it was washed away.

Q.: On that day did you make that sketch which I show you?

A.: Yes.

Q.: Whom did you give it to?

A.: To my husband.

Q.: Was that drawing to scale?

A.: Oh no! I did not intend it to be drawn to scale. It was a sketch to show my husband what I had seen. I did not know what it was.

Q.: Will you describe it generally? First of all you say you squeezed it. What was it like?

A.: The thing I had in my finger I would say a soft greyish piece of tube like a piece of rubber which had been in the water for some time. It was swollen. It was not smooth like a new piece of tube.

Q.: What about the shape?

A.: There was a straight cut at the end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish looking stuff. It had come from this sponge and it looked like black wire, but when I bent it it would fly back straight. It was like horsehair and it would fly back quickly straight. It looked like wire to me, but it could not have been wire.

The appellant's husband said that on this day (October 2) he remembered a most desperate spasm, that the appellant was almost black in the face and appeared to be choking, her teeth were locked, clenched, that he could not see inside the mouth, but by the action of the throat it looked as if something had come up into the throat. In cross-examination the appellant, I think, made it clear that the "something" which she spoke of burst through her tonsil on the left side, but whether that was made clear in her evidence is immaterial, for her case was conducted on that footing and medical evidence called on her behalf was directed to the same end. Dr. O'Hanlon, who, as already stated, had been called to see her on October 6, did not examine the appellant that night, and he did not then notice any external swelling or inflammation. The next day he examined the inside of her mouth back to the base of the tongue, but nothing was revealed, no swelling or any sign of an abscess. On October 7, however, he sent a report to Dr. Bell which was to this effect, that on October 6 he had been called to see Mrs. Hocking, who was complaining of a pain in her left chest and down the middle of the chest, that clinical examination revealed nothing definite; that Mr. Hocking had given him the following history: that last Monday the appellant had as bad an attack of tetanic spasm as she had ever had, complained of the neck, which was swollen, and until Wednesday complained of pain and soreness from the neck to the stomach; that swallowing was painful, that he thought she had symptoms of indigestion, and gave her castor oil, salts *et cetera*, that on the Thursday she had a bowel action and passed a piece of grey rubber tubing squarely cut on one end and ragged on the other, the tube was partially split up, and stuck in the lumen was what she took to be a small piece of marine sponge about which was twisted a piece of wire, that the appellant had emptied the tube along with the bowel action result in the W.C.

And he enclosed the sketch of the tube made by the appellant. Dr. O'Hanlon added that neither he nor Hocking saw the tube, but he thought that the appellant's description was too vivid for the article to be imaginary and that he was nonplussed when asked to explain it all. And he discussed the possibility of a piece of draining tube being accidentally left behind. Ultimately Dr. O'Hanlon in his evidence said that, after consulting books of reference and being satisfied that a surgeon like Dr. Bell would not leave a tube in a wound, he rejected the story. Dr. O'Hanlon, in his letter to Dr. Bell, also stated that the attacks of tetany had become fewer, but nevertheless, that the appellant was still far from well and very unsteady when she tried to walk. On October 11 the appellant herself wrote to Dr. Bell referring to "the piece of drain tube that was left in my neck", and suggesting that it was at the time she had a tetany spasm that the "tube burst into my gullet" and that she almost choked. On October 15 Dr. Bell wrote to the plaintiff saying that he had heard from Dr. O'Hanlon and found it difficult to explain her last illness or "the piece of drain tube" which she said had passed by the bowel, and he suggested the appellant should come to Sydney for medical investigation in order to see if some medical treatment could not be advised to improve her health. Accordingly the appellant went to Sydney, but Dr. O'Hanlon did not see her again before she left. On October 25 the appellant was admitted to St. Luke's Hospital. In hospital she complained of pain in the throat and chest, and inhalations were ordered. She was examined by both Drs. Bell and Ritchie. Dr. Bell found a superficial pharyngitis, which looked slightly red, but no swelling or any sign of ulceration of the throat or anything to suggest that anything had come through or burst into the throat. Dr. Ritchie found that there was very little wrong with the mouth and throat; that the appellant had mild tonsillitis on the left side. Dr. Marsh, an experienced throat specialist, was requested by Dr. Bell to examine the appellant's throat. He did so on October 30, 1939, and found no evidence of swelling, inflammation or anything of that sort, no sign of ulceration or scarring of the throat, no evidence of a "punched out hole in the tonsil" sufficient to let the tube through, nothing whatsoever consistent with the eruption of a tube through the tonsil or into the throat. But there was evidence of chronic follicular tonsillitis. He prescribed a well-known gargle, "Glyco-Thymoline", and a simple paint for the throat, which is confirmatory of his statement. Dr. Tebbutt, a pathologist experienced in blood tests, was also requested by Dr. Bell to make a blood test. He did so about October 28, and reported that the results showed no anæmia and no stained films, that the red cells showed no pathological changes, that reticulocytes were present in normal numbers, also platelets, and the leucocytes showed no significant pathological change. And his evidence affirms that the blood count was normal, that there was no evidence of any septic infection, and that the results he obtained were in no way consistent with the account given by the appellant of the eruption of a tube into her throat.

Dr. O'Hanlon saw the appellant again early in 1940. She came to his surgery and drew his attention to what she said was a scar at the back of her throat. Dr. O'Hanlon looked at it but all he could see was an elongated piece of lymphoid tissue on the posterior pharyngeal wall. He could see no hole in her throat nor a scar. Indeed he noticed no abnormality whatever, though he had no clear recollection of her tonsils, which had made no impression on him.

Now if this evidence be true, then no jury could reasonably make the finding of fact which the jury made in this case. And why was this evidence disregarded? It is that of a number of highly qualified medical men of physical conditions observed by them. To assert that the jury did not believe them is not enough unless some sound reason can be assigned for disbelieving them, or for concluding that they were mistaken. The suggestion that they were members of the British Medical Association who supported one another and denied assistance to any person attacking one of their members rests on no firmer basis than assertions in cross-examination of Dr. Thompson, a witness called for the appellant. The statement appears to have been used, and most improperly used, for the purpose of creating an atmosphere of prejudice. It looks as if Dr. Thompson is hostile to the British Medical Association, but his statement affords no rational ground for disregarding the evidence of Drs. Bell, Ritchie, Marsh, O'Hanlon and Tebbutt. But it is contended that the evidence of the appellant and her witnesses, particularly the medical evidence called on her behalf, affords ample reason for disregarding the evidence I have mentioned and supporting the finding of the jury. And this leads me to consider other facts and circumstances surrounding and connected with the story told by the appellant.

No doubt exists that the appellant was a very sick woman when the operation was performed. And no doubt exists that the wound made in the course of the operation became infected and was discharging sero-purulent matter until about July, 1938, when it healed and closed. And there is also no doubt that the appellant suffered from spasms of a tetanoid character which began soon after the operation and were persistent until the beginning of October, 1939. It is, I think, unimportant whether these spasms were due to some disturbance of the parathyreoid glands in the course of the operation, and infection of the wound, as seems probable, or were due in some degree and at some times to functional or hysterical conditions. I have already stated and commented upon the appellant's story relating to the removal of the tube.

Some other statements by the appellant also deserve attention. One, that the tube had been inserted on the right side of the throat a little to the side, to the right side of the middle. The importance of this statement I shall deal with later. Another, that in the broken tube there was a swab which she thought was a marine sponge. Sponges are no doubt used in surgical operations, but it is a matter almost of common knowledge how carefully they are counted and checked. But in this operation on the appellant no sponge was in fact used; gauze squares were used for washing out the cavity or for stopping bleeding points.

There is no confirmation whatever in the evidence of the appellant's statement.

Still another that the material that protruded from the tube looked like black wire, was like horsehair and flew back straight. The suggestion that it was like horsehair was made, I gather, on the present (the fourth) trial of this case, and not before. And the appellant said that she had a sensation in the stomach, something sticking in her, something pricking and scratching in her stomach. And it is to be noted that whilst the appellant was in Quirindi Hospital in May and June, 1938, she said that on one occasion she turned her head towards the left, something stuck in her throat and it started to bleed and that she wiped the blood from her chest with cotton wool and threw the wool in the fire. But this incident, which I suppose is a suggestion in support of the appellant's main statement, was never reported, strangely enough, to Dr. O'Hanlon or to the nursing staff of the hospital. And there is the critical statement that something burst into the left side of her face—something knocked through, as it were—something on her tongue which she swallowed. Two medical witnesses were called on her behalf, Professor Welsh and Dr. Thompson. Professor Welsh retired from the chair of Pathology in the University of Sydney in 1936. He had much knowledge of the thyreoid gland and those afflictions which centre around that gland, but he did not profess to be an authority on the technique of a surgical operation for thyreoidectomy. The other, Dr. Thompson, has practised in Sydney as a physician and surgeon for many years. Both have high academic qualifications but neither have had large experience in the operation known as thyreoidectomy.

During the first trial of this action—December, 1941—that, it is to be observed, is some two years after the appellant said something had burst into the left side of her face, Professor Welsh stated that he had examined the left tonsil and that "there was a distinct shallow oval depression about half an inch in diameter and about one-eighth inch deep and a distinct scar at the foot of that depression. The tonsil was very ragged, strips of tonsillar tissue were running from the tonsil to the back of the throat which indicated some kind of volcanic eruption had taken place from the tonsil, it was consistent with an abscess having burst from the tonsil". In August, 1942, he also had a visual examination, and in about the beginning of December, 1943, he saw a probe put in the tonsil by Dr. Thompson and pass right through the tonsil to the back of the throat. Dr. Thompson also examined the appellant shortly before the first trial—December, 1941. In answer to the question "When you first examined the tonsil, what did you see ? " he said, "Nearly at the upper end of the left tonsil there was a punched out canal. It was a quarter of an inch in diameter, three-quarters of an inch long going down to the pharyngeal wall through the tonsil. I ascertained the length with a probe and glass" (which he produced). He also said that what he saw was consistent with an abscess having burst through and consistent with a rubber tube having come through. Since that time he had made several examinations—half a dozen—but the canal had at the time he was giving evidence—December, 1943—considerably retracted. All this points to the bursting of some abscess about 1941 and not the bursting of an abscess in October, 1939, which must have considerably contracted by December, 1941. The observations of Drs. Bell, Ritchie, Marsh and Tebbutt in October, 1939, which I have already set forth, do not directly conflict with this evidence, for they refer to a time within a few weeks of "something bursting into the left side of the appellant's face". But the observations of Dr. Thompson cannot be reconciled with the observations of other medical witnesses though I do not think those of Professor Welsh are so clearly inconsistent with those other observations, for he only speaks of a distinct shallow oval depression on the left tonsil one-eighth of an inch deep and a distinct scar at the foot of that depression.

About December of 1941 at the first trial of this action Dr. Poate, a highly qualified surgeon who has specialized in operations connected with the thyreoid gland, examined the appellant's throat in court. In answer to the question "Was what you found in the throat consistent or inconsistent with her (the appellant's) story ? " he answered : "Entirely inconsistent with her story. She had evidence of chronic inflammation at the back of the throat. Both tonsils were involved in what is called chronic tonsillitis and in this area in the left tonsil there was a crypt or the orifice of a main crypt of the tonsil. The tonsil at the right side was not exactly a mirror picture, but closely resembled the one on the left side in its general appearance. She had what is called chronic follicular tonsillitis."

In August, 1942, Drs. Marsh and Steel, who is also a specialist in connexion with the ear, nose and throat, examined the appellant with Dr. Thompson. Dr. Marsh said there was a shallow opening in the left tonsil which he was sure was the entrance to the supra-tonsillar fossa or the large crypt, and there was no hole in the tonsil as was suggested by Dr. Thompson. Dr. Steel found a condition of ordinary chronic follicular tonsillitis, which is a condition in which the crypts—the small recesses which pass down into the tonsil—have become chronically infected and débris or unhealthy material collects in these crypts and is visible on examination.

On December 11, 1943, the appellant was again examined by Drs. Poate, Edye (an experienced surgeon), Marsh and Steel. Dr. Thompson was also present. Dr. Marsh was of opinion that the condition of the tonsils had become worse since he saw them in October, 1939, but all agreed that the appellant had what is called chronic follicular tonsillitis, and all denied in substance that there was a "punched out canal" such as Dr. Thompson described, though they did observe the "superficial shallow opening of the large crypt". Dr. Thompson pointed, said Dr. Edye, to a small opening in the upper lobe of the tonsil, a slit-like opening about a quarter of an inch long with a little strand of tissue across it which he described as the hole through which the tube had come, and all but Dr. Thompson agreed that this was the supra-tonsillar fossa or the large crypt of the tonsil.

It is of course true that matters of fact cannot be determined merely by the number of witnesses opposed to one another but by the quality of the evidence. But in this case both number and quality are undoubtedly on the side of the defendant.

Other matters that require consideration are the anatomical and surgical features involved in the appellant's case. It will be remembered that the appellant stated that the drainage tube was inserted on the right side of her throat—a little to the right, and she identified the spot by a scar on the throat. According to Dr. Thompson a tube placed on the right side could not effectively go into the right lobe of the thyreoid gland because it would kink, but no difficulty would arise if it were inserted obliquely across the trachea so that the outer end was on the right and the inner on the left, and he referred to a text-book in support of his statement. Dr. Poate explained that the illustration given in the text-book was an old-fashioned idea in which the tube was not put in the incision but in a special incision above the breast bone. Naturally in that case to get into the thyreoid cavity the tube had to go obliquely upwards, but it was not put through the wound. A tube put in across the trachea would cause irritation and the point would be sticking into the muscles on the other side at the back. Dr. Poate and Dr. Edye, surgeons who had performed a great number of operations on the thyreoid gland, said that no practising surgeon would dream of putting in a tube in the fashion suggested by Dr. Thompson ; indeed Dr. Edye said it would be ridiculous. Dr. Bell himself could not remember on which side of the trachea he had inserted the tube but thought it would be on the right side on account of having trouble on the left. The tube, he said, goes to one side or other of the trachea about the middle line :

> Q. : You must push it to the right if it is on the right ?
>
> A. : Yes, and if it is on the left it might go to the left of the trachea, but it must not go straight into the trachea or up in the air or down that way (indicating). You just push it inside the cavity, not to the bottom of the cavity.

There is no evidence whatever that Dr. Bell inserted the drainage tube in a manner opposed to surgical practice and that has manifest drawbacks. But it is necessary for the appellant's case that the tube crosses the trachea if it or a portion of it is to reach the left tonsil. This difficulty is on the threshold. The case made for the appellant was that the wound made in the course of the operation had become infected and was discharging thick purulent matter or pus. The broken tube, it was suggested, became embedded in this purulent matter or pus, as in a bath, and might be carried wherever the pus happened to travel, anywhere in the neck. Both Professor Welsh and Dr. Thompson agreed that this was a possible view. Dr. Thompson said that it was not only possible under the circumstances, but the most likely thing to have happened : towards the close of the case he became more emphatic :

> Q. : Did you take it that there might have been a tube there ?
>
> A. : I know there was. There is no doubt about that.
>
> Q. : You know there was ?
>
> A. : I do.

> Q.: Have you got second sight?
> A.: No, it is as plain as a pikestaff.

Professor Welsh in his evidence in chief gave the following evidence:

> Q.: Assume that the wound healed over, what could happen to the tube? I mean could it go to the tonsil?
> A.: Yes, but a great many things would happen before it got there.
> Q.: Would you describe the processes that would come about before that happened?
> A.: The object you mentioned could be carried in the pus that had accumulated within the thyreoid capsule wherever that pus happened to travel. That pus could travel anywhere in the neck.
> Q.: Anywhere in the neck?
> A.: Yes, anywhere in the neck.
> Q.: Is there any particular likelihood whether it would travel up or down?
> A.: In my experience of infection of the neck the infection usually spreads upwards.
> Q.: Has gravity got anything to do with it?
> A.: Very little influence in the neck.
> Q.: How does the infection spread?
> A.: It usually spreads between the various structures in the neck, each little structure, each muscle and the thyreoid gland itself, and a group of big important vessels in the neck are enclosed in what is called a fibrous capsule and the inflammation and suppuration usually spreads by separating these structures along these fibrous capsules opening up the spaces between them, what we call the fascial planes. One has to imagine each little structure like a muscle or gland enclosed in a band or sheath of that fibrous tissue and the tendency of the suppuration is to spread up between these and of course to carry any foreign body with it.
> Q.: Would there be anything to prevent it going to the tonsil?
> A.: No, nothing serious to prevent it going to the tonsil.

In anatomy a fascia is described as a thin sheath of fibrous tissue investing a muscle or some special tissue or organ, an aponeurosis (see New English Dictionary edited by Murray). However Professor Welsh conceded as a general statement that suppuration followed the line of least resistance, and that when there is an opening through which pus is discharging the tendency of any foreign body is to be carried towards that opening with the pus. The drainage track, as we know, in this case, was open from the time of the operation in March, 1938, until it closed in July, 1938, and during that period the track was being probed and kept open and foments were being applied from time to time. Yet the broken tube was not discharged with the pus coming from the wound, nor did the material "which looked like wire" protruding from the broken tube become visible. All this is inconsistent with the presence of a broken tube in the wound. Professor Welsh also conceded that the broken tube would have to change its course to reach the tonsil. This is his evidence:

> Q.: What you are saying is that this thing has to go up the neck and has to get up beside the tonsil?
> A.: That something of which (the appellant) regards . . . as a rough representation has to do that.
> Q.: Then it has to turn at right angles to come out the tonsil?
> A.: Then it is embedded in an abscess of the tonsil and, yes, it would have to turn.
> Q.: It would have to turn at right angles to go through?
> A.: Yes.
> Q.: So, according to you, you have a path up the neck turning at right angles and going through the tonsil?
> A.: It would not necessarily go at right angles; it would be at an angle.
> Q.: And you really suggest that is possible?
> A.: I really suggest that this is possible on the evidence.

Certainly the broken tube was very discerning. Moreover, the progress of this broken tube was extraordinarily slow. The infection appears to have remained more or less dormant or quiescent from July, 1938, when the drainage track closed until October, 1939, when the tube burst through the tonsil. And all this time the tube was lying, apparently, in an accumulating body or bath of pus. Apart, however, from these considerations there is a strong body of evidence consisting of professors of anatomy and pathology, of physicians, surgeons and throat specialists who dispute the conclusion of Professor Welsh and Dr. Thompson both on anatomical and surgical grounds.

The anatomy of the neck, so far as it was relevant to this case, was given by Professor Shellshear, Research Professor of Anatomy within the University of Sydney, and by Dr. S. A. Smith, who had been a lecturer and demonstrator and acting Professor of Anatomy within the University of Sydney. It appears from their evidence that the neck in the region mentioned is a very compact structure. All the important organs are held closely together and there is just sufficient looseness to enable the various movements of the head and neck to be made and to enable the gullet to perform its function in swallowing. Fasciæ, as Professor Shellshear said, surround every structure practically in the body. They surround arteries, veins nerves and muscles and also stretch across the spaces between muscles and are generally found in the lines of movements. In the part of the neck, important in this case, there are no spaces, but there are compartments. The gullet, the windpipe and the thyreoid gland, and all the arteries and nerves associated with those structures are in what is called the visceral compartment of the neck. Another compartment contains a complicated set of muscles which have as their function the movement of the tongue and the jaw. They are densely packed together. The carotid artery, the jugular vein, the vagus nerve are in a third compartment called the vascular department. The structures are held together by a strong fibrous network. So, as Dr. Bell said, the neck contains in a small area a number of vital structures. But apparently none of these vital structures was injured. Professor Inglis said that all structures destroyed by suppurative process are replaced by fibrous tissues, so far as the destroyed part is concerned, which have no power of contraction:

> Q.: Take the fascial planes: if they are destroyed, what are they replaced by?
> A.: They are themselves fibrous tissues and if they were destroyed fibrous tissue would be present there, but instead of having a normal arrangement they would be arranged irregularly.
> Q.: Could you have destruction of the fibrous tissue without an object like that present without destroying the muscles which are enclosed in the fibrous tissue?
> A.: I would think not. I would expect the muscles to be involved as well as the fibrous tissue covering them.
> Q.: You have seen this lady in court giving her evidence on a former occasion?
> A.: Yes.
> Q.: You saw the movements of her head?
> A.: Yes.
> Q.: What would you say as to her appearance and her capacity to move her head as being consistent or inconsistent with her story?
> A.: I would expect there to be too much contraction of fibrous tissue to permit that degree of freedom of movement.

It is conceded, I think, and in any case it is clear, that a body such as is described by the jury would not move of its own effort; it is inert. The object could not travel otherwise than in the cavity of an abscess. The abscess must have been of considerable magnitude to hold such an object. And while the inflammatory condition existed the patient would, as Dr. Poate said, have run a continuous temperature, there would be intense pain, distress in swallowing and breathing, and the patient would be desperately ill. No doubt the appellant was ill during the period in question, her neck was somewhat swollen according to the evidence. She suffered pain and had spasms, but her condition was not, I think, anything like that depicted by Dr. Poate.

This medical evidence was given at great length and cannot be summarized. It must be studied with care with the text-books and diagrams to which reference was made in order that it may be understood and fully appreciated. But I think I have sufficiently stated its main features. This evidence demonstrates how opposed to professional knowledge and how unreasonable—if not impossible—is the assertion that an object such as found by the jury was carried forward some two or three inches in an abscess, necessarily of great magnitude, through the dense fascial sheets or sheaths surrounding the structures already mentioned, and which in truth form barriers to the movement of any such object, without attacking, destroying or injuring those structures and the fascia covering them. And yet none of these structures or the fascia appear to have been destroyed or injured. I have not omitted to look at the plates in Jamieson's "Illustrations of

"CREOSOTE"

"CREOSOTE" CAPSULES

Minims 1, 2, 3 and 5, in Tins of 25's and 100's

and

"OSMO KAOLIN" (Morson)

A pure Colloidal Kaolin prepared by a special process of electro-osmosis.

from:

ALLEN & HANBURYS, LTD., LONDON

are now obtainable in AUSTRALIA

Agents and Concessionaires:

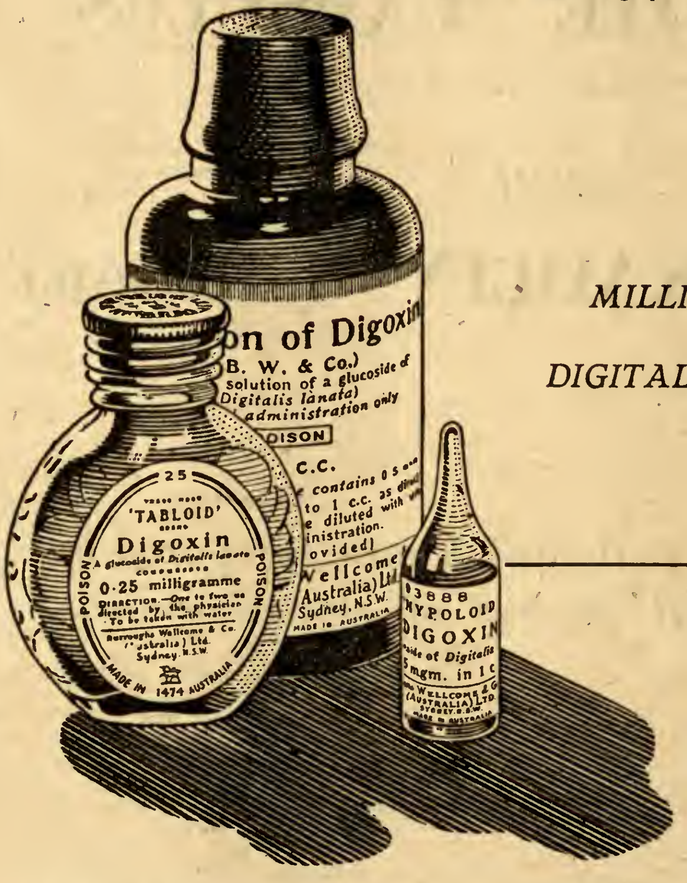
HARRISONS RAMSAY PTY. LTD., 52 Clarence Street, SYDNEY

DIGOXIN

'B. W. & CO.'

MILLIGRAMS OF

DIGITALIS ACTIVITY


on of Digoxin
(B. W. & Co.)
solution of a glucoside of
Digitalis lanata)
administration only
POISON
C.C.
contains
Wellcome
Australia) Ltd
Sydney, N.S.W.
MADE IN AUSTRALIA
25
'TABLOID'
Digoxin
A glucoside of Digitalis lanata
0·25 milligramme
POISON
MADE IN AUSTRALIA
1474
3888
HYPOLOID
DIGOXIN
WELLCOME
(AUSTRALIA) LTD.

Being a definite substance of constant composition and activity, Digoxin offers an unsurpassed degree of precision in digitalis therapy. Digoxin is a pure crystalline glycoside from *Digitalis lanata,* discovered in the Burroughs Wellcome & Co. Laboratories. It satisfies the established criteria for a reliable, potent digitalis preparation.

'TABLOID' BRAND DIGOXIN compressed products for oral administration.

'HYPOLOID' BRAND DIGOXIN ampoules of solution for intravenous injection.

SOLUTION OF DIGOXIN 'B. W. & CO.' for oral administration.

BURROUGHS WELLCOME & CO.
(AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

Regional Anatomy" and in Quain's "Anatomy", to which we were referred, but these plates are diagrammatic and, as Dr. Bell said, structures and material are dissected out for the purposes of the diagram. No jury could reasonably, I think, make the finding that was made in this case. But it is not the number of witnesses that leads me to this conclusion, but the facts already detailed and the nature and quality of the evidence given by those witnesses.

I must not omit mention of the sketch the appellant drew of the object she saw in the pan and lost in the sewer. It was much relied upon at the trial. The appellant said that it was not intended as an exact representation as to size, shape and length of what she saw, but was about the same size. But if the medical evidence demonstrates, as I think it does, that it is beyond the bounds of reasonable probability or even possibility that such an object was carried in an abscess through the delicate regions of the neck and ejected through the tonsil into her mouth, then the sketch ceases to be of importance in this case and it must be attributed to the imagination of the appellant, who according to a strong body of medical evidence manifested many symptoms of hysteria, which is a very real and serious condition in itself. At all events, that, in the circumstances, is the most reasonable explanation of the production of the sketch. Professor Welsh and Dr. Thompson accepted without question the appellant's story and were, I think, more concerned with establishing its possibility than its truth. But the truth of the story is the first consideration and reasonably should only be accepted after consideration of the known facts and the anatomical and surgical knowledge of the day. In my judgement the Supreme Court was right in setting aside the verdict found for the appellant. But it was suggested that this Court should in its discretion restore the verdict although satisfied that it is against the weight of evidence or that the evidence is overwhelmingly in favour of the appellant. Some old cases were referred to, but, if as I think, the verdict was such as no reasonable jury could find and therefore perverse, then, as Pickford, L.J., said in *Cooke* v. *T. Wilson, Sons & Co. Ltd.*, 85 L.J.K.B., 888, at p. 897, the verdict ought to be set aside again and again as often as it is found on the same evidence. No doubt the course suggested would end this long litigation but only at the expense of justice and to my mind a grave miscarriage of justice. And this, despite the opinion of the Supreme Court on two separate occasions that a verdict for the appellant should be set aside.

The remaining question is whether a new trial should be granted or a verdict and judgement entered for the respondent. Under the Judicature Act and Rules judgement might, in a proper case, be entered instead of granting a new trial (*Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at p. 706, and the cases collected in the Annual Practice 1943, under Ord. 58, r. 4, p. 1289). The Judicature system, however, has not been adopted in New South Wales. But the Supreme Court Procedure Act 1900, section 7, provides: "In any action, if the Court in Banco is of opinion . . . that upon the evidence the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order . . . such verdict to be entered". That section was considered in this Court in *Heydon* v. *Lillis*, 4 C.L.R., 1223, at p. 1227 *et seq.* Griffith, C.J., stated shortly the common law procedure and proceeded: "Bearing in mind the previous defects in the law which had been remedied nearly everywhere else but in New South Wales, what was the intention of the legislature ? . . . If the jury give a perverse verdict in favour of the defendant, the plaintiff may move to have a verdict entered for him; if they give a perverse verdict in favour of the plaintiff the defendant may have a verdict entered for him . . . If the Judge ought to have directed a verdict for the plaintiff or the defendant, the Court may order a verdict to be so entered." A perverse verdict as used by the Chief Justice means, I take it, a verdict that a jury could not reasonably find on the evidence (cf. 11 App. Cas., at 153-155). The authority given by the section should only be exercised in clear cases, but I regard this case as of that character. There is no evidence if the evidence is such that a jury on that evidence could not reasonably find the challenged verdict (*Ryder* v. *Wombwell*, L.R. 4 Ex., 32).

The question is not whether there is a scintilla of evidence to support the verdict—not whether there is literally no evidence; but whether there is evidence on which the jury could reasonably find its verdict. But a distinction is drawn between a case in which there is no evidence to support a verdict and a case in which the verdict is against the weight of evidence. In the latter case the verdict is not disturbed unless the jury, viewing the whole evidence reasonably, could not properly find it (*Metropolitan Railway Co.* v. *Wright*, 11 App. Cas., 152). The remedy in such a case is a new trial, for the case is not one in which there is no evidence, but of some evidence on which the jury, viewing it reasonably, could not properly found their verdict. The distinction is fine, but it is well enough established.

In the present case the Supreme Court was justified in my judgement, in concluding that there was no evidence on which the jury could reasonably find a verdict for the appellant and in applying the provisions of section 7 of the Supreme Court Procedure Act 1900.

This appeal should be dismissed.

The Judgement of His Honour Mr. Justice Dixon.

During the course of this protracted litigation, the evidence has been examined by many judges, but I believe that it has produced the same impression upon the minds of all of them. There has not, I think, been one of them who, if the responsibility of deciding the facts had rested with him and not with a jury would not have found unhesitatingly that the defendant did not leave a piece of tubing in the wound in the plaintiff's neck. If I myself were a tribunal of fact I should feel much confidence in that conclusion. But two juries have already returned verdicts for the plaintiff based upon the opposite finding and two others have failed to agree on a verdict. Besides returning a general verdict for the plaintiff, the last of these juries stated specially and expressly what, in its opinion, the defendant had left in the wound. The jury found that he left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube. The Supreme Court of New South Wales considered that such a finding ought not to be allowed to stand, and the majority of the court went the full length of directing that, notwithstanding the finding of the jury, a verdict should be entered for the defendant.

It is evident that the question whether, in spite of the very strong opinion formed by the judges who have considered the facts, the jury's verdict should prevail is one that depends upon the respective provinces of the court and of the jury in matters of fact. The principles which determine those provinces are well settled and the courts are often called upon to apply them. But the tests by which, under the principles, the validity of a verdict must be tried are necessarily expressed in a general form and must be flexible in application because of the infinite variety of circumstance arising.

Familiarity with this kind of question does not therefore seem to lessen the difficulties involved in saying whether a given case lies within the exclusive provinces of the jury. Moreover, in New South Wales the law has not been reformed as it has been elsewhere in the Empire by authorizing the Full Court before which a verdict is impugned to draw inferences of fact and make such order as the case may require, so that, as has been held in England, when the court has all the facts before it, after setting aside a verdict as being against the weight of the evidence, the court may enter judgement for the other party if they think that a new trial could bring to light no further material facts and to do so will do complete justice between the parties.

In New South Wales the power of the court to enter judgement contrary to the actual verdict of the jury is limited to cases in which the party against whom the jury has found is entitled as a matter of law to a verdict. Otherwise, in New South Wales, "a general verdict can only be set right by a new trial; which is no more than having the cause more deliberately considered by another jury, when there is a reasonable doubt or perhaps a certainty that justice has not been done" (Lord Mansfield, *Bright* v. *Evnon*, 1757, 1 Burrows, 390, at p. 393; 97 E.R., 365, at p. 366). "But to this there is a limit. Juries may baffle the court by persisting in the same opinion, and in such cases it has been the practice for the latter ultimately to give way." (Forsyth "History of Trial by Jury" (1852), p. 191).

In the circumstances of the present case for the defendant to be entitled as a matter of law to a verdict it must appear that upon the evidence adduced no reasonable man could be satisfied that he had left a piece of tubing in the plaintiff's neck, but it would be sufficient to enable the court to order a new trial if on the whole evidence, notwithstanding some conflict therein, the contrary conclusion appeared to be the only one which could justly and properly be reached by men who understood their duty and applied themselves faithfully to its discharge.

But, before discussing the operation of these respective tests or standards in relation to the verdict given by the jury for the plaintiff in the present case, it is necessary to state what in my view are the more material considerations arising upon the evidence. The general circumstances of the case have been recounted judicially so often in the course of the litigation that I forbear from restating them.

In the first place, it appears to me that the greatest importance must be attached to the plaintiff's direct testimony, not for its inherent probative strength or plausibility, qualities not very conspicuous upon the printed record, but because it is direct evidence, personally given before the jury, of facts which, if true, provide a strong circumstantial foundation for her case. If the piece of tubing with the protruding wire-like material and swab as described by the jury's finding did in fact pass through her alimentary and intestinal tract and was evacuated on October 5, 1939, as she describes, and if on October 2 she had all the sensations to which she swears of swallowing a foreign body bursting from her pharynx, then unless some other explanation of its entry into her body appeared to be open, a very strong foundation for her case would exist. Its strength would be so great that it would be natural, and, I think, not unreasonable, for a jury to treat the conclusion that the tubing was left in the site of the operation as too clear to be overcome by scientific expert evidence of the impossibility or improbability of a broken piece of tubing finding its way from the enucleated capsule of the thyreoid gland, whether right or left, through the left tonsil. I say this at the outset, in order to make it clear that, as I see it, the basal question is the truth of the plaintiff's testimony. If you add to her account of what occurred on October 2 and 5, 1939, her evidence of the force used by the defendant in removing the tube, on a date which must have been March 17, 1938, evidence which fell little short of describing the actual breaking of the tube, and if then you take into account, in addition, her evidence of the progress of her illness and her descriptions of her symptoms, particularly of the swelling of her neck, you have a narrative which, if true, would make a very formidable case indeed.

It appeared in evidence that on October 3 and 6, 1939, she described what had happened on October 2 and 5 to her husband and to the general practitioner then attending her, and drew a diagram of the tubing which, among other things, depicted part of a diamond slit such as would have been made in the tube used at the operation.

It is, I think, important to keep in mind that the real question governing the determination of the issue must have been whether, in face of the other evidence adduced, the plaintiff's testimony could and should be treated as substantially correct. For though, no doubt, it is logically conceivable that what the plaintiff says she experienced and observed may be susceptible of some other explanation, so far no hypothesis seems to have been put forward consistent alike with her testimony and with the removal by the defendant of the entire tube.

There is no question in a trial that is regarded as so clearly within the exclusive province of the jury to decide as the reliance to be placed upon the evidence of a witness whom they have seen and heard. The fact must therefore be faced, that however little faith we as judges may have in all this, yet before the defendant can be entitled as a matter of law to a verdict he must so utterly destroy the plaintiff's narrative as to place it outside the competence of a jury to give any credence to the material parts of it, a thing which in my experience I have never seen done with reference to direct oral testimony given upon a civil issue.

The defendant certainly constructs an extremely strong argument of fact for rejecting the plaintiff's story and for concluding affirmatively that no piece of tube remained in her neck. One somewhat paradoxical feature of her case is that its substance gains strength as her description of the object she says she saw, after she evacuated it, is discounted. If it were possible to suppose, as plainly the two medical witnesses she called as experts wished to do, that she was mistaken in her estimate of its size and in ascribing to it wires, or things that looked like wires, and a swab, it might be easier to overcome the reluctance to believe that such an object could have been discharged through the tonsil after proceeding from the cavity whence the thyreoid had been removed, or partly removed.

The finding of the jury has made some modification of her account of the object recovered. But the defendant is warranted, at all events upon the question whether there should be a new trial, in beginning with the hypothesis that, as the jury say, it was a piece of tube "somewhat less than two inches", and that there was some material that looked like wire protruding and a swab or, at least, something that looked like a swab. The size is of great importance, and the very indefinite statement of its length in the finding can scarcely mean less than an inch and a half. Horsehair strands might be considered to look like wire, but none was used. Whether gut could be mistaken for wire after such a length of time in the body, even if undissolved, seems more than doubtful.

The defendant adduces affirmative evidence, supported by the probabilities, that, at the time of the operation, sound new tubing was in use and gut, not wire stitching, and that no swab would be inserted in the tube. He proves that the tube was placed with its orifice slightly on the right side of the middle line of the plaintiff's neck, and he adduces strong evidence supported by all the probabilities that the tube would therefore be placed on the right side of the trachea and in the cavity or capsule whence the right lobe of the thyreoid was enucleated. Strong and cogent evidence is then given by surgical, medical and anatomical witnesses of high standing and attainments to the effect that the anatomical difficulties of a broken end of tube passing from the right capsule of the thyreoid across to the left tonsil and coming through the left tonsil as alleged were insuperable. Even assuming that the tube had been placed in the left capsule, the broken end would need to work through the membrane forming the capsule and then proceed within the pharyngeal wall to the tonsil, but on the inside of the superior constrictor. No pathological explanation would, it was said, account for either phenomenon. Numerous works of reference were produced in support of these views. At the trial by agreement they were treated as in evidence.

There is, I think, much danger of our misconceiving and misapplying the anatomical, surgical and medical treatises and plates, but I am bound to say that, so far as I have been able to master the relevant information they contain, it seems to me to show that many difficulties must be encountered by any hypothesis which would explain what the plaintiff says happened with the piece of tube described. I cannot, however, imagine these treatises proving of any assistance to the jury.

In answer to the plaintiff's account of the forcible removal of the tube on March 17, 1938, the defendant points out that no force would be needed unless the tube was anchored by an accidental suture to a muscle or other firm tissue; that he could not sew through the rubber without knowing it; that the hypothesis is that the muscle or tissue did not give way, but the tube tore, the piece remaining anchored; that, if so, there would be much pain and hæmorrhage, although in fact there was no evidence of bleeding; that there were many gross improbabilities in any surgeon behaving as the hypothesis demanded that it should be supposed he had done on that occasion and thereafter; and that on her own account the plaintiff had said nothing about the incident, notwithstanding a long continued illness. Then, although the wound became infected, it cleared up and there was evidence that the condition of the patient in some respects was hardly consistent with the presence of so large a body in her neck. It was true that she developed a serious condition of tetany but that, according to much evidence, might be caused by interference with the parathyreoids or by a suppurative or infective condition around them without any foreign body, and its apparent long duration was consistent with an hysterical tetany or neurosis succeeding the true tetany. There was much evidence inconsistent both with the swelling of the neck which must, it was said, have accompanied the presence of the foreign body, and with the pus or abscess which was necessarily assumed in order to account for its movement. Some intermittent swelling proved was accounted for as angio-neurotic œdema.

An X-ray picture was made on October 7, 1938, and this, it was sworn, was hardly consistent with the experience she had narrated. The condition of her throat, as seen subsequently, was also inconsistent with the discharge of the tube through her tonsil. So too was her blood count taken on October 27, 1939. For it disclosed none of the indicia of a recently discharging abscess of some size, and yet the plaintiff's own case requires the assumption that such an abscess must have existed. Then, whatever else might be said of the sketch she made of the object recovered, it was pointed out that its firm outlines did not evidence the suffering she had so recently undergone if her account were true.

Finally, it was said that, on the plaintiff's theory, the movement in pus or suppuration of the piece of tube must have been accompanied by an amount of destruction of the area through which it worked, inconsistent, if not with the plaintiff's survival, at all events with the whole history of her case, including the present condition and appearance of her throat and neck.

This very brief summary of considerations telling against the plaintiff's case, considerations that have been the subject of much elaboration by evidence, argument and exposition, leading into many ramifications of detail, will suffice to indicate the strength of the answer made by the defendant to the story told by the plaintiff, a story which, moreover, upon its face, many minds would be cautious of accepting.

But, on the part of the plaintiff a number of matters is put forward, both as impairing the force of some of the foregoing considerations relied upon by the defendant, and as giving confirmation and support to her narrative.

Much reliance was placed on the length of the period over which the plaintiff suffered acutely from tetany and from its disappearance after October 5, 1939. A calcium deficiency arising from a failure in the function of the parathyreoids produces tetany, and the parathyreoids might fail in their function because of removal, trauma, or infection.

The plaintiff's contention was that the presence of a foreign body would explain the obstinate persistence of the tetany. On the defendant's side, in the course of the proceedings, the theory was developed that, although in the beginning the plaintiff suffered from post-operative tetany, her later condition was to be ascribed to hysteria or a neurosis. The manner in which the theory was evolved, and the apparent inconsistency of the treatment prescribed by some of the medical witnesses who afterwards supported it, are used by the plaintiff as matters which the jury were entitled to take into consideration, both upon the issues and as affecting credibility. Further, hysteria or some such neuropathic condition might account for the plaintiff's putting forward her story, a view which seems eventually to have been adopted on the part of the defendant as preferable to an earlier hypothesis that it was simply a dishonest invention. The plaintiff contended that a jury might legitimately regard the readiness of the defendant and his witnesses to find in hysteria a new explanation, both of the plaintiff's tetany and of her story, as a further reason for distrusting his case.

As to her physical condition at the time when she alleges the passage of the tube took place, her husband supported her account. There was evidence too from a domestic worker that within a short time afterwards her throat showed pus, and that her neck was swollen. There was a conflict of evidence upon the condition which her throat exhibited at later stages. The medical and surgical expert called by the plaintiff swore that when he examined her two years after the incident he found in her left tonsil a punched out canal a quarter of an inch in diameter into which he inserted a probe for three-quarters of an inch. Other experts suggested that what he had seen was a crypt or the supra-tonsillar fossa, but this he vehemently disputed, saying that the fossa had been destroyed. The evidence of witnesses called for the defendant, men of undisputed qualifications and high standing, was not consistent with the deduction which the plaintiff's expert sought to draw, namely that an abscess had burst out of the left tonsil, thus explaining the passage of the piece of tube. Others who made later examinations also disagreed with him. But, it was naturally contended, that it was for the jury to say which view should be accepted.

To explain how it came about that a broken piece of tubing should be left in the wound, the hypothesis was put forward on the part of the plaintiff that the rubber from which the tubing would be cut, or the tube itself, had been softened and weakened through boiling, that in the course of stitching up the muscles after the operation a stitch had been passed through one wall of the tube and the diamond cut, that the removal of the tube had been effected at the expense of tearing off the end of the tube, that the condition of the patient had been unfavourable at the time for any surgical procedure to recover the broken piece, that the defendant had expected that in due course the stitching would dissolve and the tubing would be discharged through the sinus of the wound, and that when the plaintiff failed to get well and developed tetany, under which she continued to suffer, he was afraid to disclose what he knew about the breaking of the tube and a piece remaining in the wound. As a foundation for this hypothesis, reliance was placed on statements made in evidence as to the defendant's view of the probabilities of such a piece of tubing working out through the sinus of the wound.

Great stress was placed for the plaintiff upon the circumstances in which the sketch or diagram of the object found was produced by her. The nature of the sketch and the fact that she herself made it immediately after the event were said to be matters to which a jury might properly give great weight as confirming her story. How, it was asked, unless she had seen it, could she produce a sketch of the torn end of a tube with part of a diamond slit in it, just such as was in fact made in the tube inserted ? The answer suggested for the defendant was that she might have learned that a drainage tube would be so slit from conversation with nurses or from observation during the long period she was a patient in hospitals.

Another consideration advanced for the plaintiff was the immediate effect of her story upon the general practitioner attending her. For it was plain that when on October 6, 1939, he heard her story of the passage and recovery of the tube, he was impressed with it as something not imaginary, and he did not feel that there was anything impossible or incredible in the supposition that a foreign body left in the wound accounted for her experience and the medical history of her case. His subsequent support of the defendant's case and the course he followed during the litigation and as a witness, were used on behalf of the plaintiff as discrediting his evidence. His earlier attitude was relied upon as something in which a jury might find guidance upon the question whether the plaintiff's case was really incompatible with anatomical and medical facts.

Then, some changes of ground, over the four trials, were attributed to the defendant and some of his witnesses. These were said to provide the jury with a further reason for distrusting his case. One such matter was the question whether the tube was inserted in the wound after the stitching was done, or whether there was some stitching round the tube after its upper end was placed in the enucleated thyreoid capsule. Another concerned the question whether unconsciousness was characteristic of severe tetany. A third was the attempt to explain the continued tetany as hysterical.

A contention of the plaintiff, which I think fails, is that the jury might place a construction inconsistent with his denial of the plaintiff's story upon the defendant's conduct in his dealing with the matter when he learned what she had said about the piece of tube coming from her throat and her swallowing it and passing it. I will not go through the details. It is enough for me to say that I do not think a jury could legitimately place upon the defendant's conduct the construction contended for. What he did is what might be expected of any experienced professional man confronted by a strange but circumstantial story which he believed to be without foundation, but which he could not account for except by the invention or the imagination of the patient.

A great difficulty in the plaintiff's case is necessarily the anatomical structure of the neck. The theory put forward on her behalf to meet it is that the piece of tube became encapsulated in an abscess, the activity of which varied, that the suppuration broke through the inner wall of the thyreoid capsule and that, in the visceral compartment, it passed under the middle constrictor muscle and through some areolar tissue between it and the superior constrictor, being contained within the membrane of the laryngeal and pharyngeal wall until it burst through the left tonsil. On my understanding of the matter, if I were the tribunal of fact, I should reject this hypothesis. But I am not the tribunal of fact. Because, doubtless, there are fewer difficulties if the remnant of the tube was on the left side, it is maintained for the plaintiff that it was in the left cavity that the tube was inserted. There is no direct evidence to support this allegation, and there are strong reasons for believing that the tube was inserted in the area that had been occupied by the right lobe of the thyreoid. But, even so, the thesis is maintained that the piece of tube made its way to the left tonsil, passing, as I understand the theory, in front of the trachea within the pretracheal fascia. Realizing, no doubt, the difficulties of this or any other theory, counsel for the plaintiff say that it is not incumbent upon her to show how the thing happened ; it is enough for her to prove that it did happen, and to rely on the general observation that more surprising and unexpected things have been known to occur with reference to the human body.

However, the surgeon whom the plaintiff called as an expert besides expressing confident opinions in her favour concerning the pathological conditions contributing to the passage of the tube, and drawing from the circumstances many deductions of a medical and surgical character supporting her case, gave direct evidence that there was no difficulty whatever in the piece of tube passing from the thyreoid cavity behind the fibrous and mucous membrane of the pharynx to the angle of the jaw where, he said, lay a triangle of tissue providing no obstruction.

The highly qualified witnesses for the defendant, who probably did not conceive of the possibility of such a course being followed, particularly by so large a foreign body, had excluded by their evidence almost every other possibility, and had deposed to the general impossibility of the passage of the tube to and through the tonsil. Their evidence is, however, open to the observation that on this question it appears very much to have been concerned with anatomical and pathological conditions outside the pretracheal fascia.

In the Supreme Court, Davidson, J., dismissed the foregoing theory propounded for the plaintiff, observing that the witness did not refer to the tonsil, that is expressly, and that at the triangle mentioned a thick fascial plane known as the pharnygobasilar fascia existed, lining the inner surface of the constrictor. But probably the witness would say that the abscess spread between that and the pharyngeal membrane.

The swab and the wire caused much difficulty to this witness and another expert called for the plaintiff, as appears pretty clearly from a reading of their evidence. The latter would not countenance the idea that in the form depicted the object had been used at the operation, but in many respects his evidence supported the plaintiff's case. The latter suggested that the "swab" was detritus picked up by the tube, and that what was called wire was in fact gut.

In the foregoing statement I have attempted to bring to a point, out of a vast mass of material, by no means easy to handle, the chief circumstances and considerations tending to prove or disprove the issue, as distinguished from the many subordinate matters of evidence affecting the details of proof and the credit of witnesses.

It is clear, however, that in all I have said I have been dealing with matters of fact, and that such views as I have expressed amount to comments on and conclusions from evidence. *Prima facie*, such matters are for the jury. Scientific evidence, even when composed in part of text books, is no less matter of fact within the province of the jury than is other evidence, and it is the jury's function to estimate the reliance to be placed on scientific witnesses however eminent.

Great as is the strength of the defendant's case, it remains true, as it appears to me, that there stands opposed to it the facts sworn to by the plaintiff and the evidentiary matters upon which she relies, either as supporting her case or detracting from that of the defendant, as well as much testimony given by her two expert witnesses.

To say that as a matter of law the jury were bound to decide the issue in favour of the defendant appears to me to be contrary to the conceptions upon which depends the distinction between, on one hand, the sufficiency of evidence as a question of law, that is as a question for the court applying legal standards of evidence and proof, and on the other hand the review by the court of findings made upon conflicting evidence or inference.

I cannot see how at the conclusion of the defendant's case it would have been possible for the judge to withdraw the issue from the consideration of the jury and direct them to return a verdict for the defendant or non-suit the plaintiff. No one suggests that at the conclusion of the case for the plaintiff he could have done so.

"The proper legal effect of a proved fact is essentially a question of law but the question whether a fact has been proved when evidence for and against has been properly admitted is necessarily a pure question of fact": *Waei Mohammad* v. *Mohammad Bakhsh*, 1929, 57 I.A., 86, at p. 92 (J.C.).

In the passage so often quoted from his judgement in *Ryder* v. *Wombwell*, 1868 L.R. 4 Ex., 32, at p. 38, Willes, J. makes in a sentence the distinction between the power of the court to control perverse or unreasonable verdicts by new trial, a power the exercise of which involves no question of law, and its duty to decide the question of law whether there is evidence which might reasonably satisfy the jury that the fact sought to be proved is established.

In England, where the Court of Appeal now has powers of reviewing the findings of a jury which do not exist in New South Wales, the difference between there being no evidence to go to the jury and the jury's verdict being against the weight of evidence has less importance than formerly: *per* Lord Parker, *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at p. 706. Lord Atkinson (*ibid.*, pp. 669-680) discusses the powers of the Court of Appeal, and in doing so maintains the distinction. See further *Mechanical & General Inventions Co.* v. *Austin*, 1935 A.C., 346, and particularly *per* Lord Atkin at p. 369, *per* Lord Wright at pp. 372-374.

But though in England the powers of the Court of Appeal are so extensive that they need not consider whether as a matter of law an appellant is entitled to the verdict, yet in relation to other jurisdictions and tribunals the question whether a party is entitled in point of law to a finding may be all-important, as for instance in the case of an appeal from a County Court or an attack upon an award of arbitrators or under a case stated.

In the case of *Driver* v. *The War Service Homes Commissioner No.* 1, 1924 V.L.R., 515; 30 A.L.R., 375, at p. 376 *et seq.*, Cussen, J., in reference to an application for an order that arbitrators state a special case, fully discussed the matter and collected the authorities. He ends his discussion by saying: "From these cases I conclude that where there is a real conflict of evidence, no question of law arises and that no such question arises even if the evidence is all on one side, if on that side is the onus of proof, but that the question whether there is or is not any evidence upon which there might properly be a finding in favour of the person upon whom is the onus of proof may be a question of law." See further *Shepherd* v. *Felt and Textiles of Australia*, (1931) 45 C.L.R., 358, at p. 373 and pp. 379-380.

What precisely Griffith, C.J., meant in *Heydon* v. *Lillis*, (1907) 4 C.L.R., 1223, by the expression "perverse verdict" in the passage to which my brother Starke has referred, I am not sure. Sometimes it is used to describe a disregard of a direction from the judge. Sometimes it refers to a finding contrary to that which the facts of the case legally demand. But I think it always means something more than a verdict against the weight of the evidence: *Saunders* v. *Davies*, 1852, 16 Jurist, 481, *per* Pollock, C.B.; *Jones* v. *Spencer*, 1897, 77 L.T., 536, at p. 538, *per* Lord Morris; *per* Kenny, J., *McInernay* v. *Clareman*, 1903, 2 Ir.R., 347, at p. 369. In any case, the meaning and effect of the terms used in section 7 of the Supreme Court Procedure Act are too clear and well settled to be affected by the choice of expression of the late Chief Justice.

For the reasons I have given I am of opinion that the course taken by the majority of the Supreme Court in entering a verdict for the defendant ought not to have been followed.

There remains what to my mind is the more difficult question, namely whether yet another new trial should be ordered.

In *Mechanical and General Inventions* v. *Austin*, 1935 A.C., 346, at p. 373, Lord Wright said: "For the appellate court to set aside the verdict of a jury as being against the weight of evidence, merely because the court does not agree with it, would, in my judgement, be to usurp the functions of the jury and to substitute their own opinion for that of the jury: that would be quite wrong. Much more is necessary in order to justify the setting aside of a jury's verdict where there is some evidence to support it. No doubt the test can be roughly described as being whether the verdict of the jury was reasonable, but what is meant by reasonable in this connexion must be carefully defined." And again (on p. 375) he said: "The question in truth is not whether the verdict appears to the appellate court to be right, but whether it is such as to show that the jury have failed to perform their duty. An appellate court must always be on guard against the tendency to set aside a verdict because the court feels it would have come to a different conclusion."

The test propounded by Lord Selborne in *Metropolitan Railway Co.* v. *Wright*, 1886, 11 A.C., 152, at p. 153, was approved by the Privy Council in *Cox* v. *E.S. and A. Bank*, 1905 A.C., 168, at p. 170, namely: "There must be such a preponderance of evidence, assuming there is evidence on both sides to go to the jury as to make unreasonable and almost perverse, that the jury when instructed and assisted properly by the judge should return such a verdict." An expression repeatedly used by courts is "overwhelming preponderance".

In *Place* v. *Searle*, 1932, 2 K.B., 497, at p. 315, Scrutton, L.J., said: "An enormously strong case is needed before the Court of Appeal can say that though there is evidence given by a witness it cannot reasonably be believed by the jury. Unless we get such a case as that, we must assume, in considering the question whether there is any evidence on which the jury could reasonably find a verdict for the plaintiff, that they accepted the evidence in favour of the plaintiff and disbelieved the evidence given in favour of the defendant", *scil.*, where such disbelief is necessary to the conclusion.

A distinction has always existed between cases on the one hand in which the verdict is vitiated by some legal error, such as a material misdirection or misreception of evidence, or was perverse in the sense that the jury disregarded a judge's direction and, on the other hand, cases where, on conflicting evidence, a verdict is found which is said to be against the weight of the evidence. In the former case, apart from the modern rule about substantial miscarriage, a new trial was granted *ex debito justitiæ*. In the latter it was a matter depending upon a more general discretion.

According to Mr. W. M. Best in a note in 2 Jurist, 167, "Where a jury disregard a presumption of mixed law and fact, and *a fortiori* where they find in a particular way on a mere question of conflicting testimony all the authorities agree . . . that the granting of a new trial is only matter for the discretion of the courts which are moreover very cautious in the exercise of this power." For this reason the fact that a new trial has already been had with a like result to the first has been thought to be a relevant and an important consideration.

In *Goodwin* v. *Gibbons*, 1767, 4 Burrows, 2108 ; 98 E.R., 100, Lord Mansfield denied, however, that there was any general rule against granting a third trial, saying : "A new trial must depend upon answering the ends of justice". But the fact that there have been two concurring verdicts must carry weight. In *Foster* v. *Steele*, 1837, 3 Bing N.C., 894 ; 132 E.R., 654, Tindall, C.J., and Park, J., considered that the fact that the second trial produced the same result was decisive, whilst Vaughan and Coltman, JJ., said that they would try the result on a third "but if the third were against the defendant, then the proceedings should end".

In a case of misdirection a majority of this court ordered a third trial, stating the test thus : "To induce a court to order a third trial, the party against whom the verdict has passed must establish that the second trial took a course clearly prejudicial to him, and so erroneous that the verdict cannot justly be allowed to stand" : *Australasian Brokerage Ltd.* v. *Australian and N.Z. Banking Corporation*, (1934) 52 C.L.R., 430, at p. 442.

It is consequently clear that the defendant assumes a heavy burden in undertaking to make out a case for a new trial. He seeks to strengthen the foundation provided by the facts of the case by two additional grounds of complaint. He says in the first place that the jury should have been directed that a higher measure or standard of persuasion is required by the law in the case of a charge of neglect causing bodily harm. Davidson, J., has shown that this complaint is ill founded. Indeed, even if the cause of action here amounted to an offence under section 54 of the Crimes Act 1900, our decision in *Helton* v. *Allen*, (1940) 63 C.L.R., 691, and *Briginshaw* v. *Briginshaw*, 60 C.L.R., 336, show that the contention cannot be supported. See too *Piggott* v. *Piggott*, (1938) 61 C.L.R., 378, at p. 415. The solid body of authority against introducing the criminal standard of persuasion into civil causes cannot be shaken by the unconsidered statement of Lord Atkin in the case from Allahabad, the report of which I have had the advantage of reading. Similar statements will be found elsewhere, and I think they are traceable to Article 94 of Sir Fitzjames Stephen's "Digest of Evidence". Unfortunately the influence of J. H. Wigmore's formidable learning and reasoning has not been felt as it should in this and other matters.

In the next place, the defendant says that the conduct of the case by the plaintiff's counsel was calculated to lead the jury to decide the case on false issues, and generally to distract them from their true duty.

Without denying that the lengths to which counsel went were such as to require weighing with the other elements in the case, it is, I think, necessary to remember that he was entitled to put strongly to the jury the relative positions occupied by his client and by the defendant, in obtaining the assistance of the medical profession ; and, in the next place, that in the result the jury made a finding very carefully, indeed significantly framed, upon the exact issue of fact upon which the case depended—a finding expressed in a way which made it clear that their minds were addressed to the very issue.

After all, the fundamental question in the case is whether the evidence opposed to the plaintiff's case is so overwhelming that the court should again intervene to destroy the verdict as not only wrong, but as completely unreasonable and unjust.

In determining this question the most important consideration is that faith in the honesty of the plaintiff must be ascribed to the jury and an inability to believe that the woman they saw and heard was telling a purely imaginary story.

No doubt they could not reach that view without first weighing against it the very substantial case made by the defendant. But once belief in her as a witness and acceptance of the veracity of the witnesses called on her behalf is assumed, the evidence for the defence must wear a very different complexion. By that I mean that it must also be taken that the more valid criticisms of and contentions made concerning that evidence were accepted. On these hypotheses the verdict begins to wear much less an unreasonable aspect. The question of credibility and the estimate of the character and reliability of the witnesses is, of course, essentially a matter for the jury.

But their finding gives to the tubing a size "somewhat less than two inches", and that size is really very considerable in relation to the tissues involved. From the beginning, I have been struck with this statement and the reference to the material that looked like wire. If the jury had supposed that the plaintiff had been quite mistaken in her estimate of size, their finding would have gained strength.

But, as it is, after closely considering the plaintiff's evidence and the medical and other evidence called by her, I think that the matter is within the province of the jury.

There is, I think, when it is separated out, much evidence supporting the jury's verdict. The case is one in which the strong feeling that the jury's verdict is mistaken, based as it is on a natural incredulity concerning the plaintiff's story, and on the cogency of the countervailing evidence, makes it difficult to appreciate the amount of evidence really available to support the jury's finding. In such circumstances the decision rests with the jury, and if the result is unjust, theirs is the responsibility.

On the whole case I think that the court ought not to interfere and grant another new trial. I am therefore of opinion that the appeal should be allowed, the order of the Supreme Court discharged and the verdict restored.

The Judgement of His Honour Mr. Justice McTiernan.

At the last trial of this action a jury again returned a verdict for the plaintiff. The Supreme Court in Banco set aside the verdict and ordered that a verdict be entered for the defendant. This appeal is against the whole of the court's order.

The Supreme Court in Banco may, under section 7 of the Supreme Court Procedure Act 1900, in any action order that a verdict be entered for either the plaintiff or the defendant : it is not a condition of this statutory power, as it is of the common law power to enter a verdict, that leave was reserved at the trial to do so : *Heydon* v. *Lillis*, 4 C.L.R., 1223. Under section 7 the condition is that in the opinion of the court the party for whom it enters a verdict is on the evidence entitled as a matter of law to a verdict in the action. Instances of the exercise of this power are *The New Balmain Ferry Co.* v. *Robertson*, 4 C.L.R., 379 ; *Heydon* v. *Lillis* (*supra*) ; *Shepherd* v. *Felt Textiles Ltd.*, 45 C.L.R., 359. In the lastmentioned case this court approved an order of the Supreme Court for a verdict to be entered ; in the other cases, this court decided that the Supreme Court ought on the evidence to have entered verdicts. In the present case the defendant is as a matter of law entitled to a verdict if there is no evidence on which the jury could reasonably return the verdict for the plaintiff.

There is a distinction between the power of the court in the case where there is insufficient evidence to justify the verdict and the case where the verdict is against the weight of evidence. In the latter case the court may set aside the verdict and grant a new trial, but it may not order a verdict to be entered ; the Supreme Court of New South Wales has no power to decide facts in an action tried with a jury ; hence in this case this court has not the power to decide facts. See *Hocking* v. *Bell*, 43 S.R., 154 ; *De Gioia* v. *Darling Island Stevedoring Company Limited*, 45 S.R., 5 ; and *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at 664. In that case Lord Atkinson observed, "No doubt in cases where the verdict is set aside as against the weight of evidence, there will be evidence on both sides, but now that the scintilla doctrine has been abandoned the tasks of the court in the two classes of cases closely approach each other. The "scintilla doctrine" was abandoned in *Ryder* v. *Wombell*, L.R. 4 Ex., 38.

Davidson and Halse Rogers, JJ., were of the opinion that there is no evidence on which a jury may reasonably find that the defendant left in the surgical wound a piece of the drainage tube that had been inserted in it, and for that reason the verdict could not stand. Roper, J., was of the opinion that the verdict ought to be set aside on the ground that it is against the weight of evidence and a new trial granted. After considering all the evidence I have come to the conclusion that the opinion of the majority is right and the order of the court should be affirmed.

But if it were not correct to hold that there is no evidence that ought or could reasonably satisfy a jury that the defendant left a piece of the drainage tube in the wound I should agree with Roper, J., rather than restore the verdict. If I thought that leaving out of account the contrary evidence, there is sufficient evidence *prima facie* to support the verdict, nevertheless I should reach the conclusion that, on the whole, the contrary evidence in point of probability, so greatly preponderates against the verdict that it is an unreasonable verdict and that the jury could not have performed their duty judicially and returned the verdict: *Metropolitan Railways Co.* v. *Wright*, 11 A.C., 152; *Mechanical and General Inventions* v. *Austin*, 1935 A.C., at pp. 369 and 374; *Bright* v. *Eynon*, 1 Bur., 395; 97 E.R., at p. 366.

It is an undisputed fact that no piece of drainage tube was found in any part of the plaintiff's body or taken from it. Notwithstanding the circumstantial story which the plaintiff gave of the breaking of the drainage tube, it would not be reasonable for the jury to infer that the defendant left a piece of tube in the surgical wound unless they were satisfied that the object which, according to her evidence, "burst into the left side of her face", was part of the drainage tube which had been inserted in the surgical wound, and that such object had moved out of the wound inside the neck until it emptied into the pharynx. The story seems to me to be a glaring improbability. Upon the evidence there are reasons why it was unreasonable for the jury to attach any credit or weight to it. These reasons depend upon the discrepancies between the object which she said she swallowed and evacuated, and the part of any tube which, upon the whole of the evidence on the question of the kind of tube inserted into the wound, could have been left in it, if the defendant had broken the tube and failed to remove the portion left in the wound. The plaintiff said in evidence that she examined the object evacuated, but lost it and then made a sketch which is in evidence. Her description in the evidence of the object is: "I would say a soft greyish piece of tube-like rubber which had been in water for some time. It was swollen. It was not smooth like a new piece of tube. There was a straight cut at one end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish looking stuff. It had come from the sponge and it looked like black wire, but when I bent it back it would fly back straight. It was like horsehair and it would fly back quickly straight. It looked like wire to me but it could not have been wire." The special finding of the jury was: "We find that the defendant left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which tube had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube."

The plaintiff's case is that the whole thing, that is, tube, swab and the protruding material, was left by the defendant in the wound. It is not suggested that the defendant put the swab into the tube as an element belonging to it. Such a thing would defeat the purpose of the tube; and the suggestion, if made, could not possibly be supported by the evidence. The jury does not specify what the "blackish looking stuff" in the plaintiff's description is. They say that it was "some material which looked like wire". The suggestion made to explain the swab and the protruding material is that a swab was caught by the stitches made at the time of the operation and that the protruding material is gut with which the stitching was done. The only evidence given in the case about the swabs used during the operation and the way in which they were used, and also about the method in which the stitches were made, provides no reasonable basis for any inference along the lines of the suggestion which is made. There is, in my opinion, no evidence upon which the jury could reasonably find that a swab with gut or any other material protruding from it was attached to the drainage tube which the defendant inserted in the surgical wound at the time of insertion or became attached to it afterwards. The evidence does not support the conclusion that the object described by the defendant, or by the jury in their special finding, was part of or comprised in that drainage tube.

The result is that the jury was left without any explanation which could be reasonably supported by the evidence, as to what became of the piece of drainage tube which would have been left in the wound if the defendant had broken the tube; admittedly no piece of tube was found in her neck or taken from it. In these circumstances the jury could not reasonably accept her story about the breaking of the tube or infer from it that the defendant left a piece of the drainage tube in the wound.

Assuming, however, that the abovementioned object was left by the defendant in the surgical wound, it was necessary for the plaintiff to prove that the object moved upwards, and ultimately entered the pharynx. The plaintiff called expert witnesses to prove that the object did so. For the purpose of their evidence they assumed that the defendant left part of a drainage tube in the wound but it does not seem that they were prepared to assume that what was left in the wound had the material like wire protruding from it; but whatever its characteristics, they also assumed, for the purpose of their evidence, that her story that she swallowed a piece of tube eighteen months afterwards was also correct. If the assumption is made that the thing left in the wound is the identical thing which the plaintiff said that she swallowed, the hypothesis which, upon the evidence of these witnesses the jury were invited to accept, was that pus accumulated in the thyreoid capsule where the internal end of the tube was, that is to say in the space which had been occupied by the gland before the thyreoidectomy; that instead of rupturing outwards and reopening the incision made in the neck, the abscess, consisting of the piece of tube and pus, ruptured the thyreoid capsule at a point contiguous to fascial spaces leading ultimately to the point at which the pharynx was penetrated; that it was carried upwards in pus through those spaces until it turned to the right and went through the pharyngeal wall. According to these witnesses the condition of the left tonsil showed that a tube went through the tonsil into the mouth. The hypothesis therefore requires that the foreign body penetrated the pharyngeal wall at the point opposite the left tonsil.

The pictures and drawings, which were put in evidence, representing the anatomy of the neck, show the arrangement of fasciæ, muscles and other anatomical parts through which the object in question must have passed if it went from the thyreoid capsule through the tonsil into the pharynx. Considering the size, shape and other characteristics of the object which is supposed to have moved through these parts, there are *prima facie* great difficulties in accepting the hypothesis that it did travel through them. The arrangement of muscles and fascia establish the fact that there are real obstacles. Professor Welsh does not indicate any specific course by which the pus could have carried the tube from the thyreoid capsule into the mouth through the tonsil. He accepted Professor Shellshear's evidence about the anatomy of the neck. In my opinion it would not be reasonable for the jury to find on Professor Welsh's evidence that the object which the plaintiff swallowed had come from the thyreoid cavity unless he pointed out how it could overcome the obstacles mentioned in Professor Shellshear's evidence.

According to this witness there were anatomical obstacles in the region of the thyreoid capsule and at the level of the hyoid bone; and the arrangement of muscles forming the pharyngeal wall in the region of the tonsil was another obstacle. Dr. Thompson gave an account of the course by which, in his opinion, the object about which the plaintiff gave evidence moved from the thyreoid capsule into her mouth. Her evidence does not agree with the evidence which Professor Shellshear gave about the anatomy of the neck and, as I have said, the evidence of Professor Shellshear was accepted by the plaintiff's only other expert witness, Professor Welsh. The jury could not possibly get as adequate an account of the anatomy of the neck from Dr. Thompson's evidence as from Professor Shellshear's evidence or the pictures and drawings which are in evidence. The jury could not possibly have any reasonable justification for declining to give credit and weight to the evidence of Professor Shellshear. It may be observed that Dr. Thompson's evidence is that the tube penetrated the pharynx. It is not clear that he said precisely that it went through the tonsil. No reliance was placed on any medical condition at any other place than the tonsil to support the hypothesis that the foreign object came into the mouth. The evidence of the expert witnesses called by the defendant, read from the transcript, is a refutation of the evidence of Professor Welsh and Dr. Thompson. But I decide the matter not on the weight of the evidence on the defendant's side, but on the question of the sufficiency of the evidence on the plaintiff's side, that is, as a matter of law. The nature and arrangement of the many parts of which the neck consists are facts established by the pictures and drawings in the evidence. Having regard to these facts, I think that the jury could not reasonably find on the evidence which Professor Welch and Dr. Thompson gave in this case that the object which the plaintiff says that she swallowed came from the thyreoid cavity, up the neck, through the left tonsil into the mouth.

There is the further evidence about the condition of the plaintiff's tonsil, the symptoms of tetany, and her illness. I do not think that this evidence adds anything to support the proof of the issue of negligence to which the trial was confined. It adds nothing because there is no evidence on which the jury could reasonably find that the foreign body which the plaintiff said came out of her neck had been left in her neck by the defendant.

As I have shown, the foreign body, which the plaintiff said she swallowed and evacuated, was a piece of rubber tube characterized by the addition to it of a swab and material which looked like wire.

The evidence is insufficient to establish the fact that the defendant left in the wound a swab either with or without any such material protruding from it. The jury therefore could not reasonably find that the defendant left in the wound the foreign body described by the plaintiff in her evidence or by the jury in their special finding. The result is that there is no evidence on which the jury could properly make the special finding or return a verdict for the plaintiff on the issue in the action as defined by the plaintiff's particulars of the negligence which she alleged.

In my opinion the appeal should be dismissed.

◆

British Medical Association News.

NOTICE.

The General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioner has been released from full-time duty with His Majesty's Forces and has resumed practice as from the date mentioned:

Dr. R. St. J. Honner, 193, Macquarie Street, Sydney (January 7, 1946).

◆

Medical Societies.

THE MEDICO-LEGAL SOCIETY OF VICTORIA.

In July, 1942, the committee of the Medico-Legal Society of Victoria decided that the society should suspend its activities until circumstances permitted them to be resumed. The committee has now decided that the society shall resume its activities, and arrangements will be made to hold the usual quarterly meetings during 1946. It is intended that the first meeting should be held in March, 1946. It is hoped that the annual meeting and dinner of the society will be held in July, as has been customary.

The committee has decided that a subscription of £1 11s. 6d. shall be payable by each member on June 1, 1946, to cover membership from January 1, 1946, to June 1, 1947.

The honorary secretaries are John V. Barry, Equity Chambers, 472, Bourke Street, Melbourne, and R. J. Wright-Smith, Royal Melbourne Hospital, Melbourne. Members are requested to forward to the secretaries the names of legal or medical practitioners who are desirous of being elected to membership of the society.

◆

Post-Graduate Work.

THE UNIVERSITY OF QUEENSLAND POST-GRADUATE MEDICAL EDUCATION COMMITTEE.

General Revision Course at Brisbane.

The University of Queensland Post-Graduate Medical Education Committee announces that a general revision course for medical graduates will be held during 1946. A synopsis of the first three parts of the course is given below. The fee for the first five parts of the general revision course will be £20, or for any one part thereof, £4. This will be paid by the purchase of chit-books containing fifteen tickets, each for one lecture. Tickets should be endorsed by the holders and handed to the attendant before each lecture. Service and ex-service medical officers whose application for pre-discharge training or post-discharge rehabilitation has been approved will be issued with five chit-books free of charge. For further information concerning the general revision course, application should be made to the Secretary of the University of Queensland Post-Graduate Medical Education Committee, Medical School, Herston Road, Brisbane, telephone B 0534.

Part I: Pædiatrics.

A course in pædiatrics, which began on February 4, will continue until Saturday, February 23. The course is being held at the Medical School, the Mater Misericordiæ Hospital, the Brisbane Children's Hospital and the Brisbane Women's Hospital.

Part II: Medicine.

A course in medicine will begin on Monday, February 25, and continue until Saturday, March 16. The course will be held at the Medical School, the Mater Misericordiæ Hospital, the Red Cross Blood Transfusion Service and possibly Rosemount Hospital.

Part III: Obstetrics and Gynæcology.

A course in obstetrics and gynæcology will begin on Monday, March 18, and conclude on Saturday, March 30. The course will be held at the Medical School.

Lectures in the Principles of Pathology.

The University of Queensland Post-Graduate Medical Education Committee announces that a series of ten lectures in the principles of pathology will be given by Professor J. V. Duhig, commencing on Saturday, March 16, 1946. This course is part of Term III of the anatomy, physiology and pathology course arranged for candidates presenting themselves for Part I of the examination for the degree of master of surgery. It is also part of the senior course in medicine, suitable for candidates preparing themselves for the examination for membership of the Royal Australasian College of Physicians. The first class will be held at 10 a.m. on Saturday, March 16, 1946, at the Medical School, Herston Road. Thereafter, for the three weeks following, the class will meet at 8 p.m. on Mondays, Wednesdays and Fridays at the Medical School. Each lecture demonstration will be of two hours' duration. The fee for the course will be £7 7s.

◆

Correspondence.

POLITICS AND THE MEDICAL PROFESSION.

Sir: Dr. John Dale in his address rightly said that political problems are at present of great concern to the profession. It is doubtful, however, whether his address can be classed as a scientific consideration of those problems. For instance, Dr. Dale said that nationalization or socialization of the medical service has been effected to a large extent in Germany and Russia, thus inferring that nationalization and socialization are the same; which they art not. Nationalization means the taking over by a capitalist State of some business, for example, the post, the railways or the mines *et cetera*. This is State capitalism, not socialism. Socialism is a political economy in which the means of production, including the land, are owned collectively and payment is made according to quality and quantity of work done. Germany under Hitler was capitalist and had much State capitalism directed by twenty big capitalists such as Thyssen. The Soviet Union is the only socialist country yet seen in the world. It presents the only existent examples of socialization; for socialization is impossible except in a socialist country, as I believe Dr. Upjohn pointed out.

Many of our medical services are now nationalized wholly or partly. The question as to how far this nationalization must be extended is a matter for practical consideration, for weighing pros and cons in this our capitalist State. It is not a question of socialism. A socialist may or may not endorse nationalization. I know no socialist principle that demands total nationalization of medicine. Socialists are opposed to centralized bureaucracy and strongly support local democratic control, which is not incompatible with democratic central authority. In this connexion it gives me pleasure to observe that in general the members of the British Medical Association do not adopt an intransigent attitude to proposed reforms *à la* Dale. They treat them on their merits, that is practically, and not in relation to an abstract ideal.

Dr. Dale asserts that the world is a battleground between two philosophies, that of collectivism, in which the individual is subservient to an abstraction, the State, and on the other hand that of freedom, which aims to secure the utmost liberty and development for the individual. This also is erroneous. There are two opposed philosophies in the world today, as there have been for 2,000 years—namely, idealism and materialism. The idealists assert that spirit preceded matter, the materialists that spirit is a junction of certain highly organized forms of matter. State worshippers such as Mussolini and Hitler are always idealists. According to their writings, the State is a mystic divine entity, to which all individual aspirations must be sacrificed. In fact, they demanded the sacrifice of every liberty in favour of the greedy monopolists whose agents they were. There was no collectivism there.

On the other hand, the materialists, headed by Stalin, write no mystic nonsense about the State. They, like our law schools, regard the State as an organ of power directed against external and internal enemies. They therefore assert that the State is a temporal material thing, earthly, not divine, that will pass into the museum of antiquities when it is no longer necessary—that is, when socialism is universal and the latest State, the socialist State, will have neither internal nor external enemies. These materialists are collectivists. Regarding freedom, the materialists point out that man is at once one and many; that he is individual and yet cannot develop that individuality except in association with others; that freedom is the recognition of necessity as we can be free only to the extent that we know the laws of nature and can use them for our purposes; that collectivism gives each individual greater freedom than any other form of economy.

Medicine, like all science, is *de facto* materialist. Christian Science is idealist; surely Dr. Dale does get close to Christian Science when he says that a wicked person cannot be well. The American pathologists found Mussolini's body healthier than the average, and every-day observation tells us that the wicked are often exceedingly well by all medical criteria.

I agree with Dr. Dale that there is a tendency to centralized power. That tendency is the direct result of monopoly capitalism, which produced Hitler's monstrous machine with all its brutality and slavery. We met it with our centralized people's power. This must be so till we have the world which I am sure Dr. Dale desires, the world in which the administration of things replaces the administration of persons. We must recognize, however, that that world is coming, not because we like it, but because it is the inevitable result of man's historical development.

Let us then, as we do in obstetrics, try to ascertain the laws governing the delivery of this new world. Thus we may not only avoid such useless and destructive opposition as Hitler's, but also lend such constructive aid as may make this delivery as smooth and painless as possible.

Yours, etc.,
473, Bourke Street, GERALD O'DAY.
Melbourne,
January 31, 1946.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF LUMBAR INTERVERTEBRAL DISK DISEASE.

SIR: It would appear possible, after reading the papers on intervertebral disk disease, contributed by Dr. Young and Dr. Clark (THE MEDICAL JOURNAL OF AUSTRALIA, January 12), that anyone with little experience in this branch of medicine might be left with the idea that the pathology was simple, the diagnosis presented no difficulties, and the surgical treatment as advocated was orthodox and obviously beneficial.

For instance, Dr. Young differentiates between minor and major tears of the annulus. It would be interesting to know upon what pathological material this teaching is based, or, as he prefaces his remarks by "I believe", is this all a matter of faith?

As Dr. Young is so insistent that the torn disk is the origin of the pain, I am confused by his observation that an injection of local anæsthetic into a tender sacrospinalis will often relieve it. This means either that pain is generated in the muscle, which is a negation of his primary thesis, or, stranger still, that the disk relieved of the "protective muscle spasm" is no longer capable of exciting painful impulses. I have a hope that in some future communications Dr. Young will allow that muscles, joints and ligaments of the low back may be allowed pains in their own right, and in response to various factors, as they have elsewhere.

Perhaps it would be for an orthopædic surgeon to comment on the description of the vertebral junction at the site of a disk degeneration as "a flail joint". This carries with it such grave implications.

Among the things which make diagnosis appear so simple is the strange divorcement of orthopædic and neurological examination. The practitioner is told that the latter is too difficult and is really unnecessary. It would seem desirable that the investigation of such a serious disorder should demand the most careful approach from every possible angle.

Dr. Clark further simplifies what for many surgeons is a very difficult problem, by saying that it is "easy and at the same time dishonest to eliminate cases which for psychological reasons are likely to be failures". I gather that Dr. Clark's teaching is to operate irrespective of their psychological state. This I assume eliminates the dishonesty of trying to protect people whose pains are in the psyche from the benefits of having two to four vertebræ fused. One of the primary tasks of those who operate for the relief of pain is to make sure that a peripheral attack may be competent to do so. Sciatic and low back pains, like facial pains, have often a purely psychological basis, and I have never found it easy to assess them or been conscious of the dishonesty inherent in my attempts.

Dr. Clark localizes the offending disk by "wobbling the spines", as Dandy described. He summarily dismisses Mr. Hugh Trumble's scientific assay on the value of this test, because Dandy is a great surgeon and invented ventriculography. Respect for age and authority, though admirable, have had little place in the advancement of science, and the complex mechanics of the low back are a long way from the ventricles.

For those among us less radically inclined, the consoling fact remains that the pioneers of this particular branch of surgery and most who have followed them with a massive experience, think that the surgical attack on the localized area of disk protrusion or softening is sufficient for the day. If we are to aim at "possible bony ankylosis" of every vertebra that "wobbles" on its neighbour, then this operation should be approached with much more caution and much less frequently than is at present the case.

Yours, etc.,
Craignish, DOUGLAS MILLER.
185, Macquarie Street,
Sydney.
February 4, 1946.

INGUINAL HERNIA AND ITS REPAIR.

SIR: In the issue of THE MEDICAL JOURNAL OF AUSTRALIA of January 26, 1946, Lieutenant-Colonel Harley Turnbull gives some figures which, if further analysed, would be of the greatest possible value in the study of hernia. In Table II he lists the number of operations performed in one military hospital in Australia. He states that 700 operations were performed, of which 52 were for recurrent herniæ. He does not state, however, whether these 52 recurrences were from the 700 operations which he states were performed. If the 52 were recurrent herniæ from the original 700 would Colonel Turnbull kindly state: (*a*) how many of the recurrences were at the site of the original indirect inguinal hernia, and how many were at the site of direct herniæ; and (*b*) the type of primary operation performed in each case.

One gathers from the article that all the operations were performed by the Bassini method, but this is not specifically stated.

Yours, etc.,
C. CRAIG, M.D., M.S., F.R.A.C.S.,
General Hospital, Surgeon Superintendent.
Launceston,
February 4, 1946.

ULCERS IN THE MOUTH: AN APPEAL FOR HELP.

SIR: Can anyone help me? I am a sufferer from ulcers in the mouth. They have, over a period of five years, gradually increased in frequency, so that I am now never free from them, and having from one to six ulcers at a time. I am a non-smoker and non-drinker, but tend to have a hyperchlorhydria. The ulcers are small, cream colour, surrounded by a zone of hyperæmia, very painful, and occur on the mucosa of the tongue, cheek or gum. At times a cervical gland is enlarged and painful. At present I have five of these ulcers, and can hardly speak and cannot eat solid food because of pain.

The ulcers disappear in about two weeks, and I have not found any application that will shorten this period. I would be grateful for any advice regarding prophylaxis or treatment. Is there any theory regarding their cause?

Yours, etc.,

February 3, 1946. M.B., B.S.

TOOTHACHE AND FOLK-LORE.

Sir: In connexion with your "Current Comment" on "Toothache and Folk-Lore", it might interest your readers to know that, in 1913-1914, a well-known Chinese herbalist advertised in the Ballarat trams: "Worms skilfully extracted from decaying teeth."

Yours, etc.,

111, Collins Street,
Melbourne,
February 5, 1946.

Paul G. Dane.

FUNCTIONAL DISORDERS.

Sir: May I correct a misapprehension which has been stated not a few times in your correspondence columns in recent years. I would like to urge on those practitioners who ask for more instruction in psychological medicine that the reading of articles and books, and even attendance at lectures and demonstrations have only a limited value unless the student (pre-graduate or graduate) is prepared to engage in clinical work. One can no more learn psychiatry out of books or papers than any other branch of medical science and art. There are plenty of facilities in Sydney for acquiring experience in examining and treating patients suffering from functional disorders—if the student is prepared to find the time.

Meanwhile I would commend to Dr. Pain's notice a series of articles published in this journal, July, 1940, onwards.

Yours, etc.,

Sydney,
February 1, 1946.

W. S. Dawson.

OBSTETRIC BULLETINS.

Sir: During the latter war years it has been my pleasure, with the sponsorship of Wyeth Incorporated, to furnish the wartime graduate in the services with a series of obstetric bulletins.

The original intention was to publish twelve. The end of the war has meant the discharge of many doctors from the services, while the printers' and coal-miners' strikes delayed the publication of the last five of the bulletins. Obviously the distribution became difficult, and I have been approached by a number of ex-servicemen as to where the remaining bulletins might be obtained.

May I suggest that any doctor either discharged from or still in the services may procure the remaining bulletins as they appear by sending a permanent address to myself at the Obstetrics Department, University of Sydney.

Yours, etc.,

Bruce T. Mayes,
Professor of Obstetrics.

University of Sydney,
February 6, 1946.

THE ADEQUACY OF MEDICAL TRAINING.

Sir: I would like to congratulate Dr. Basil Williams on his excellent and thought-provoking article on "The Adequacy of Medical Training", published in the issue of The Medical Journal of Australia of the second instant. Two of his points particularly appeal to general practitioners. Firstly, the importance of the psychological approach to the patient in all branches of medicine from medicine to obstetrics. Most practitioners learn the elements of this subject by practical experience *plus* the exercise of their innate common sense. A course of training in the early preclinical years on psychology *plus* a course given by a senior general practitioner would be of inestimable value in smoothing the early years in practice for the young graduate. Unless group medicine in the future can provide a substitute for the old apprentice system, this appears to be the only alternative. The second point is his complaint of the time spent in the first year in the purely scientific subjects—physics, chemistry, botany and zoology. Since the projected alteration of the curriculum for secondary schools apparently aims to make the fifth year a year of preparation for students proceeding to the university, it would be possible to include chemistry and physics for all students for the faculties of medicine, engineering and the sciences. The time thus saved could be devoted to psychology and perhaps philosophy.

It has long been claimed that the medical course is more fashioned to produce specialists than general practitioners, thus, as Dr. Williams states, catering more for the minority of 10% than for the majority of men who will become general practitioners. Let us urge that the framers of the curriculum will pay attention to this want and include training in the principles of medical practice and the psychological handling of patients, even if it means the omission of some of the detailed aspects of the more specialized subjects.

Yours, etc.

Tamworth,
New South Wales,
February 12, 1946.

Keith J. B. Davis.

THE DIGESTION OF DOGS AND CHRONIC OSTEOMYELITIS.

Sir: This is primarily a request for information, but is also prompted by the hope that it may stimulate interest, in case the idea is new.

A correspondent, writing in a recent issue of the *British Medical Journal*, has drawn attention to the remarkable speed with which dogs recover from accidental or operation wounds. Now dogs also seem to be able to digest solid fragments of dead bone and putrescent fat, tendon and muscle. These observations suggest the following questions:

Do dogs bury bones to attract soil bacteria, which help their digestive processes?

Might not dogs' saliva, gastric juice *et cetera* contain some substances which could be used for the local treatment of chronic osteomyelitis?

Might not dogs' serum contain precursors of these substances, which could be used systemically for the same disease?

Chronic osteomyelitis is such a painful, crippling and demoralizing disease, that, however fantastic, no avenue should be left unexplored (*pace* A.P.H.).

Yours, etc.,

February 1, 1946. "Curious."

Naval, Military and Air Force.

APPOINTMENTS.

The undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 23, of February 7, 1946.

Naval Forces of the Commonwealth.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Emergency List.

Promotions.—The following is promoted to date 4th January, 1946, with seniority in rank as shown opposite his respective name: *To be Surgeon Captain*—Surgeon Commander (Acting Surgeon Captain) Alexander Scott-Mackenzie, 20th June, 1943.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Appointments.—John Gordon Barbour and Ronald Keith Smyth are appointed Surgeon Lieutenants, dated 1st December, 1945.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointment of Temporary Squadron Leader T. B. Lindsay (282073) is terminated on demobilization with effect from 10th September, 1945.

The appointments of the following Temporary Flight Lieutenants are terminated on demobilization with effect from the dates indicated: M. M. McKeown (255912), 31st October, 1945, H. G. Hiller (256811), W. B. MacDonald (256798), 1st November, 1945.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned has been registered, pursuant to the provisions of *The Medical Acts*, 1939 to 1940, of Queensland, as a duly qualified medical practitioner:

Macindoe, Philip Hudson, B.S., 1935 (Univ. Sydney), "Merchiston", Garfield Drive, Paddington, Brisbane.

Books Received.

"An Introduction to Physical Anthropology", by M. F. Ashley Montagu; 1945. Springfield: Charles C. Thomas. 8½" × 5½", pp. 339. Price: $4.00.

"Pacific Parade", by Frank Clune; 1945. Melbourne: The Hawthorn Press. Sydney: Angus and Robertson Limited. 8" × 5", pp. 132. Price: 6s.

"Psychology for Nurses: Designed and Written for Student Nurses", by Bess V. Cunningham, Ph.D.; 1946. New York, London: D. Appleton-Century Company, Incorporated. 8½" × 5½", pp. 356, with illustrations.

"Films in Instruction, Part I: Films: Their Use and Misuse", by Squadron Leader N. H. Rosenthal, B.A., B.Sc., with a Foreword by Professor G. S. Browne, M.A. (Oxon.); 1945. Melbourne: Robertson and Mullens Limited. 8½" × 5½", pp. 50, with illustrations. Price: 3s. 6d.

"An Introduction to Clinical Surgery: Surgical Wherefores and Therefores", by Charles F. M. Saint, C.B.E., M.D., M.S., F.R.C.S. (Eng.), F.R.A.C.S.; 1945. Cape Town: The African Bookman. 8½" × 5½", pp. 303. Price: 25s.

Medical Appointments.

According to the provisions of the *Native Administration Act*, 1905-1941, of Western Australia, the following medical practitioners have been appointed protectors of natives for the districts mentioned: Dr. Lamb Musso, all districts within the State; Dr. D. J. Oldmeadow, Broome and all districts and parts of districts within the magisterial district of Broome; Dr. I. Roberts, Derby and all districts and parts of districts within the magisterial district of West Kimberley; Dr. H. C. Pope, Marble Bar, Port Hedland and all districts and parts of districts within the magisterial districts of Pilbara and Port Hedland, Roebourne, and all districts and parts of districts within the magisterial district of Roebourne; Dr. R. A. D. Pope, Onslow and all districts and parts of districts within the magisterial district of Ashburton; Dr. V. H. Webster, the magisterial district of Wyndham.

Dr. F. W. A. Clements has been appointed a member of the Council of the Canberra University College.

Dr. G. H. McQueen has been appointed medical officer of the Central Board of Health Department, South Australia.

Dr. J. M. Dwyer has been reappointed honorary assistant pathologist, Royal Adelaide Hospital, Adelaide.

Dr. H. R. G. Poate has been appointed President of the New South Wales Medical Board.

Dr. C. J. M. Walters has been appointed a member of the New South Wales Medical Board and a member of the Board of Health, New South Wales.

Dr. Frances C. Robertson has been appointed a member of the Board of the Hobart Public Hospitals District in accordance with the provisions of *The Hospitals Act*, 1918, of Tasmania.

Dr. Gilbert Brown has been appointed honorary consulting anæsthetist, Royal Adelaide Hospital, Adelaide.

Diary for the Month.

FEB. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 27.—Victorian Branch, B.M.A.: Council Meeting.
FEB. 28.—South Australian Branch, B.M.A.: Scientific Meeting.
MARCH 1.—Queensland Branch, B.M.A.: Branch Meeting.
MARCH 2.—Tasmanian Branch, B.M.A.: Annual Meeting.
MARCH 5.—Federal Council, B.M.A., in Australia: Meeting at Sydney.
MARCH 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MARCH 6.—Western Australian Branch, B.M.A.: Council Meeting.
MARCH 6.—Victorian Branch, B.M.A.: Branch Meeting.
MARCH 7.—New South Wales Branch, B.M.A.: Special Groups Committee.
MARCH 7.—South Australian Branch, B.M.A.: Council Meeting.
MARCH 8.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
MARCH 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

PUBLIC SERVICE OF SOUTH AUSTRALIA. — Applications will be received by the Public Service Commissioner, Adelaide, South Australia, until and including Friday, 15th March, 1946, for the position of Resident Medical Officer for South Australian Government Mental Hospitals. Terms of appointment: The position is a resident one, a house is provided at Parkside at a rental of £2 10s. per week, and the appointee will not be allowed private practice. Four weeks' leave is granted annually, plus one day in lieu of each public holiday worked, and six months' leave on full pay is granted after each five years' resident service in a mental institution. The salary will be within the range from £730 to £830 per annum. Applicants should give full details of their academic attainments and practical experience, supported by testimonials if possible. Applicants with military service should supply particulars of the length, locality and nature of such service. Before permanent appointment, a medical examination will be required, and if permanently appointed, the officer may be required to subscribe to the South Australian Superannuation Fund.—G. H. P. Jeffery, Acting Secretary, Public Service Commissioner.

THURSDAY ISLAND HOSPITAL: Medical Staff Requirements—Reopening of Hospital. Medical Superintendent, Hospital. Salary £800 per annum. Position also carries appointment of Government Medical Officer, £200 per annum. Right of private practice allowed. Forward fare. Steamer leaving March 21. Apply before March 9, Department of Health and Home Affairs, Box 917M, G.P.O., Brisbane.

SENIOR SISTER AND DEPUTY MATRON, GRESSWELL SANATORIUM, GENERAL HEALTH BRANCH, DEPARTMENT OF HEALTH, VICTORIA. Gresswell Sanatorium, 192 beds, is an approved part-time Training School for Nurses in Tuberculosis Diseases and for qualification for Post-Graduate Certificate in Tuberculosis. Applications, addressed to the Secretary to the Public Service Board, Public Offices, Treasury Place, Melbourne, C.2, and accompanied by evidence of experience and qualifications, and a statement of date and place of birth, are invited for the above mentioned position up to Saturday, 16th March, 1946. Yearly salary: £343 (minimum), £369 (maximum), plus cost of living allowance (£20 at present), less deduction of £42 a year for board and lodging. Qualifications: to be a general trained and certificated nurse registered in Victoria, and preferably to have had experience in charge work in a similar institution. Application forms may be obtained from the Board's office.

RENWICK HOSPITAL FOR INFANTS, SUMMER HILL. Applications, on prescribed form, are invited for the position of Resident Medical Officer. Salary at the rate of £4 p.w. Vacancy March. Particulars, Medical Superintendent.—W. B. Rodd, Secretary, Benevolent Society of N.S.W., General Offices, Thomas Street, Sydney.

AUSTRALIAN GENERAL SURGEON, aged 36, late Lieutenant-Colonel, R.A.M.C., seeks partnership in general practice or other surgical employment in Australia. Apply No. 102, c.o. The Medical Journal of Australia, Seamer St., Glebe, Sydney, N.S.W.

MILDURA BASE HOSPITAL, VICTORIA: MEDICAL SUPERINTENDENT. — Applications are invited for the position of Resident Medical Superintendent at the above institution, which has a daily average of 174 in-patients, including private, intermediate and public patients, with general and midwifery wards. The appointment will not carry the right to a private practice. A sound knowledge of radiology or pathology, or both, is essential. A senior degree in medicine or diploma in radiology is desirable. The salary will be at the rate of £1,000 per annum plus an allowance in lieu of residence until such time as a hospital residence is made available. Applicants should give full details of qualifications, experience, age and war service (if any).—E. J. R. Taylor, Manager and Secretary.

WANTED TO PURCHASE, general practice in outer Sydney suburbs. Cash available. Particulars to "D.J.", this office.

VICTORIA

Arthur Niall & Coghlan

MEDICAL AGENTS

ASSISTANTSHIPS
PARTNERSHIPS
PRACTICES

Opportunities available suitable ex-service practitioners.

Finance.—Finance can be arranged for approved purchasers.

127 Collins Street East,
MELBOURNE.
Cent. 1322.

QUEENSLAND MEDICAL PRACTICES

Brisbane, outer suburb, old established, every facility, income £3,500, comfortable house, ideal situation. Goodwill and property £4,500.

Country town, cool climate, prosperous district, income £4,000, shared hospital appointment. Goodwill £2,500, very modern brick home, every convenience, £5,500.

Country town (solo), death vacancy, excellent district, comfortable home (either sell or rent). Widow will also sell instruments, library and furniture.

Country town (three men), income £1,900, excellent hospital facilities, goodwill £1,200, comfortable ten-roomed house on lease £3 week.

Country town, prosperous dairying district, income from practice and private hospital over £5,000. Price, including property and hospital goodwill and furniture and fixtures, £3,750.

Will lease for nine months with option to purchase old-established general practice. Income over £4,000, good country town, every facility. Owner qualifying for specialist diploma.

We have other attractive opportunities and welcome inquiries, particularly from ex-service men.

DAVID W. REID
Medical Agent,
MEDICAL AND SURGICAL REQUISITES PTY. LTD.
Wickham Terrace, Brisbane
Telegrams: "Measure", Brisbane.
'Phones: B 0294, B 0295, M 7450.

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

SUBURBAN PRACTICE for sale. Average takings £8,000. Suit partners. House (14 rooms) for sale or rental.

TASMANIAN CITY PRACTICE for sale, £3,000. House for sale or rental.

SUBURBAN AND COUNTRY PRACTICES for sale.

ASSISTANTS required, suburban and country practices.

FULL DETAILS ON APPLICATION

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance available in approved cases to facilitate transfers.

Telephones { **B 4159**
{ **XA 2644 (After Hours)**

Telegrams: "Locumtens Sydney".

C. R. STRANGE,
Manager and Secretary.

FOR SYMPTOMATIC RELIEF AND TREATMENT OF PEPTIC ULCER

Following the investigation of Mutch (B.M.J., October, 1937), the therapeutic value of Hydrated Magnesium Trisilicate was established. Having a ratio of MgO to SiO_2 of 1 to 2.24, Trinesium Stearns is in exactly the form advocated by Mutch. Clinical tests have established the efficacy of Trinesium in the management and treatment of peptic ulcer. It provides protection against the corrosion of the ulcer bed, together with continuous control of hyperacidity and sustained adsorbent action.

In combination with the gastric juices Trinesium forms a silica gel over the ulcer, thus providing mechanical protection for the ulcer. By its neutralising action and its potent adsorbing power, Trinesium can create a pepsin-free and acid-free zone. This guards the raw ulcer area from further irritation and corrosion due to digestive activities.

Mutch found that with Magnesium Trisilicate, a minimal amount of mineral base controls hyperchlorhydria continuously.

TRINESIUM
TRINESIUM
TABLETS

Samples and further literature on Trinesium will be gladly sent to the medical profession on request to Frederick Stearns & Company Division, Box 3286, G.P.O., Sydney.

Trinesium

STEARNS

FACTS ABOUT TRINESIUM

ANTACID Trinesium relieves gastric hyperacidity within a few minutes. The single dose will control excess acid for the entire period of gastric digestion.

ADSORPTIVE Mutch reports that, as an adsorbent, Magnesium Trisilicate "far transcends bismuth salts, magnesia, aluminium hydroxide or other medicaments in common use."

ANTIPEPTIC The silica gel formed by Trinesium provides mechanical protection for stomach ulcers. It subdues pain and inflammation and helps to achieve healing.

DOSAGE Trinesium (Hydrated Magnesium Trisilicate) is available in bottles containing 1¾ oz., and in tablet form. Average dose is 21 grains (one level teaspoonful).

ACCEPTED
AMERICAN MEDICAL ASSN

Frederick Stearns & Company
Division
SYDNEY, AUSTRALIA

DDT

the new Insecticide, is now manufactured in Australia. Although supplies are not yet available to fully meet the ever-increasing demands of the public, our Laboratories, before marketing, will give preference to the Medical Profession. DDT is obtainable in a 5% solution, as well as in a 5% dusting powder for use in surgeries and hospitals.

Sample available on request.

ANDREW'S LABORATORIES, SYDNEY

Manufacturers of Drugs and fine Chemicals

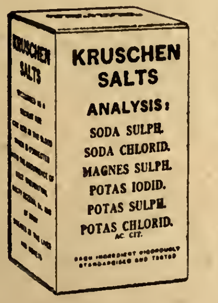
Swift Correction of Intestinal Stasis

Physicians know the far-reaching consequences which result from the condition of intestinal stasis, and realize that many symptoms, including cardiac asthma, neuritis, arthritis, gouty eczema, etc., may be removed by its relief.

While many aperients will give the necessary relief to the intestinal tract, in many cases this is accompanied by unpleasant and often serious after-effects. Saline purgatives sooner or later lose their effectiveness and more severe evacuants must be resorted to.

Carefully controlled clinical tests conducted a few years ago in England established the value of a small regular dose of the simple mixture of salts in Kruschen Salts, in the prophylaxis and treatment of colon stasis and dyschezia.

Kruschen introduces healthy regularity and is neither injurious nor habit-forming.



KRUSCHEN SALTS

E. Griffiths Hughes Ltd. Established 1756.

WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

A Notable Advance in

NASAL MEDICATION

"CIBA" BRAND
Trade Mark Regd

"PRIVIN" "CIBA"

[2-(naphthyl-1-methyl)imidazoline hcl]

Powerful synthetic vasoconstrictor—producing decongestion of the nasal mucous membrane.
INSTANTANEOUS and PROLONGED relief for 2-6 hours.
Absence of irritation and side-effects.
Assured isotonicity and corrective physiological reaction.
Economical and efficient medication.

Acute and chronic rhinitis of an infectious, allergic and nervous nature (coryza, hay fever), catarrh and purulent sinusitis, after operations on the nose and for diagnostic purposes in laryngitis, pharyngitis and conjunctivitis of varying ætiology.

CIBA LIMITED - - SWITZERLAND

Further information and clinical packages upon request to the Direct Representative: J. M. Harkness, Ph.C., etc., Box 271, G.P.O., Sydney. Wholesale Distributors, Elliotts and Australian Drug Pty. Ltd., Sydney.

Make the most of Sleep . . .

Enjoy the deep refreshing sleep that follows a steaming cup of Cadbury's Bourn-vita at supper-time and you will awaken refreshed, and full of energy. Bourn-vita induces the really sound sleep that is so essential to convalescents. The calcium and phosphorus it contains are valuable to the nerves, and being a combination of eggs, full-cream milk and chocolate, Bourn-vita is easily digested and very nourishing.

Cadbury's
BOURN-VITA
for deep refreshing sleep

The Safe Antiseptic Soap!

PROTEX
ANTISEPTIC OIL GERMICIDAL SOAP

There's no end to the tiring and grimy jobs that war needs put upon us today. Protex is on the job, too! Protex fluffs up a fine refreshing lather that gets rid of every trace of the day's toil. Protex is protective, too! It contains a wonderfully efficient antiseptic that helps guard against infection. That's why Protex is such a grand soap for everyone today!

4½d. per cake—2 cakes for **8½d.**

Did you PROTEX yourself this morning?

Medical Practices, etc.

Medical.

1. Unopposed country practice, excellent climate, south N.S.W. Average cash take £1,200. Good public hospital. Premium £1,000.
2. Unopposed subsidized practice, northern N.S.W. Cash take £1,100. Residence to rent. Price £600.

All Enquiries Confidential.

GOYDER, SON & CO.,

Medical Agents,

Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.

After Hours: JA 7202.

The name of Goyder has been associated with Medical Agency since 1902.

Microscopes

By leading British and American makers, new and second hand.
Diagnostic Sets,
Ophthalmoscopes,
Oil Immersions,
Micro-Accessories,
Stains, Reagents, etc.

BOOKS: Medical and Science Text-books, Natural History, Early Australian, new and second hand.

Catalogues free.

WANTED TO BUY: Microscopes, Survey Instruments, Sextants, Telescopes, etc.

Good Prices, Prompt Cash.

N. H. SEWARD PTY. LTD.
"Optical House",
457 Bourke St., Melbourne, C.1.

STATE PUBLIC SERVICE, QUEENSLAND.—Applications are invited from qualified medical practitioners for appointment as Medical Officer, School Health Services Branch, and Deputy Director of Maternal and Child Welfare. The successful applicants will be paid salary at the rate of £900 per annum, such amount being subject to basic wage adjustment (at present an addition of £32). Applications should contain full name, age and particulars as to date of graduation, results obtained, and other qualifications and experience. Returned servicemen should furnish, on the prescribed form obtainable from the undersigned, full particulars regarding war service. Applications, with copies of testimonials, should be forwarded to the Secretary, State Public Service Commissioner's Department, Box 488H, G.P.O., Brisbane, before Friday, 1st March, 1946.—D. W. FRASER, Secretary.

COMMONWEALTH OF AUSTRALIA: REPATRIATION COMMISSION, N.S.W. BRANCH. Applications are invited for the position of Visiting Specialist Physician to the Repatriation Sanatorium, Lady Davidson Home, Turramurra. The fee payable will be £5 5s. per fortnightly visit of three hours' duration. Applicants should state whether they are married or single, their age, war service (if any), and forward copies of testimonials. Applications should be lodged not later than Friday, 8th March, 1946, with the Deputy Commissioner of Repatriation, Box 3994VV, G.P.O., Sydney.—R. W. CARSWELL, Deputy Commissioner.

Service for Doctors

Watson House, Bligh Street, Sydney.

Telephone: BW 4433.

No. 586.—Western district unopposed practice taking over £2,000. Excellent hospital and house. Scope for improvement. Goodwill £500. Terms available.

No. 594.—Newcastle district general practice taking over £2,000. Substantial appointments. House to purchase. Goodwill and property £2,700. Terms available.

No. 590.—Base hospital town. Progressive district taking over £5,000, from surgery over £2,000, mids. 100, few lodges. Price goodwill £3,000. Residence to rent. Opportunity two ex-service practitioners, physician and surgeon, in partnership.

No. 599.—Sydney industrial suburb. Half-share available in partnership. Vendor's gross takings over £2,500. Lodges £400 p.a. House to rent, £4 weekly. Price goodwill £1,100 for quick sale, and alternative house or flat for vendor.

Assistantships available in good country towns for single and married ex-service practitioners. Salary range £800 to £1,000, with all expenses and accommodation. Cars an advantage, but not essential.

Locum required urgently for base hospital town, general practice.

Particulars in Confidence.

WATSON VICTOR
LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

THE INCORPORATED LIVERPOOL SCHOOL OF TROPICAL MEDICINE (University of Liverpool): LECTURER IN TROPICAL HYGIENE.—The Council invites applications for the Lectureship in Tropical Hygiene. The lecturer will be required to devote his whole time to teaching for the Diploma in Tropical Hygiene and to research in this subject, under the general direction of the professor in charge of the department. The scope of the lectures will cover the organization and practice of preventive medicine in the tropics in urban and rural areas, including methods of disease control, the hygiene of food and water, and nutrition. Candidates should hold a medical qualification and a Diploma in Public Health, and preference will be given to men who have had considerable and varied experience in the tropics. The salary will be not less than £800 per annum, according to qualifications and experience. The lecturer will be required to join the Federated Superannuation Scheme for Universities. Applications, giving particulars of age, qualifications, previous experience, and the names of three persons to whom reference may be made, should reach the Dean, School of Tropical Medicine, Pembroke Place, Liverpool, 3, not later than April 30, 1946. Envelopes should be marked "Lectureship in Tropical Hygiene".

WANTED by ex-serviceman, Sydney suburban or outer suburban practice, income £2,000 to £3,000, cash buyer. Exchange attractive flat on North Shore line if necessary. Apply No. 104, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

COMMONWEALTH OF AUSTRALIA, REPATRIATION COMMISSION: VACANCIES FOR MEDICAL OFFICERS.—Applications are invited for appointment as Medical Officer (2 positions) at the Repatriation Sanatorium (Lady Davidson Home), Turramurra, near Sydney. The appointments will be on probation for a period of six months, and the existing salary range is £760 to £952 per annum. However, the appointees will be granted allowances to raise their commencing remuneration to £868 per annum. On confirmation of appointments, the appointees will be required to make contributions under the Superannuation Act. Permanent quarters are not yet available, but when required to remain at the institution overnight or during week-ends, sleeping accommodation will be arranged and a charge of one shilling will be made for each meal provided. Applicants should state whether they are married or single, their age, war service (if any), and forward copies of testimonials. Successful applicants will be required to meet the cost of their transportation to Sydney and private practice will not be allowed. Applications should be lodged not later than Saturday, 16th March, 1946, with the Deputy Commissioner of Repatriation in the capital city of the State in which the applicant resides.—G. F. WOOTTEN, Chairman, Repatriation Commission.

BUNDABERG HOSPITALS BOARD: VACANCIES, MEDICAL STAFF.—Applications are invited for the following positions at the Bundaberg General Hospital: (*a*) Medical Superintendent. Salary £1,100 per annum plus basic wage adjustments of £32. (*b*) Senior Resident Medical Assistant. Salary £750 per annum plus quarters. (*c*) Junior Resident Medical Assistant (second year preferred). Salary £550 per annum plus quarters. Applicants to state particulars of previous experience and when available to commence duty. Applications close with the undersigned 19th March, 1946.—H. PUSHACK.

ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY. — Written applications with copies of testimonials are invited from legally qualified medical practitioners for appointment to the position of Assistant Chief Executive Officer and Medical Superintendent. Salary to accord with capabilities and experience, but not to be less than £800 per annum. Particulars and application forms are obtainable from the hospital. Applications to be addressed to the President of the hospital not later than Saturday, May 4, 1946.

MEDICAL ASSISTANCE FOR LORD HOWE ISLAND.—The Lord Howe Island Board of Control wishes to establish contact with practitioners of medical and surgical experience desirous of spending a holiday of, say, twelve months' duration at the island. The Board will pay a retainer to the selected doctor at the rate of £400 per annum, in addition to which the doctor would secure the returns from private practice there. The Board will also meet the cost of the doctor's transport between Sydney and the island. Full particulars are obtainable from the Chairman, c.o. Chief Secretary's Department, Sydney.

WANTED, part-time assistant. Must live in eastern suburbs. On telephone and own car. 3-8 p.m., Monday to Friday. On call Sundays and alternate nights. £10 per week plus petrol. Telephone FM 6530.

Books on Science Medicine Technic

GRAHAME BOOK COMPANY
PRUDENTIAL BUILDING
39 MARTIN PLACE, SYDNEY, N.S.W.

ROYAL HOBART HOSPITAL, TASMANIA: JUNIOR RESIDENT MEDICAL OFFICERS. The undersigned invites applications from duly qualified medical practitioners for appointment to the above positions. Salary £350 per annum, with board and residence in accordance with provisions of the Hospitals Wages Board Determination. Annual leave amounting to two weeks is granted upon completion of twelve months' service. Applicants are informed that, owing to the present shortage of medical personnel, they may, during the course of their appointment, be called upon to render service under the Emergency Medical Service or in the Government Medical Service centres for not more than four weeks of their term. Applicants to state age, qualifications and date able to assume duty if appointed. Applications to be accompanied by three recent testimonials. Single fares at boat and train rates refunded on completion of six months' service. The conditions of this appointment are approved by the British Medical Association and State Medical Coordination Committee.—H. M. WRIGHT, Secretary.

ST. VINCENT'S HOSPITAL, SYDNEY.—Applications are invited for the position of full-time Director of the Pathological Department. Salary £1,250 per annum. Applications, together with testimonials, to reach the Secretary of the hospital by March 15, 1946. Applicants are to state when they would be prepared to take up the appointment.

ESTABLISHED GENERAL PRACTITIONER desires to purchase practice about £2,000 p.a. with reasonably modern house in good class suburb. Apply G.P., c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

WANTED, Catheterizing Cystoscope in good condition. Apply No. 103, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

YOU CAN OFFER MORE THAN

the unhappy choice between Psoriasis and Chrysarobin

The common skin discoloration and frequent dermatitis caused by chrysarobin may be as objectionable as psoriasis itself. Such disfigurements are unsightly—*and largely unnecessary!* Anthralin Ointment, used for the treatment of psoriasis and mycotic skin infections, is not only *more effective* than chrysarobin, but causes *much less skin discoloration* and involves *far less risk of dermatitis.* Used on the scalp or face in recommended concentrations, Anthralin carries less danger of conjunctivitis. Since Anthralin is less toxic than chrysarobin, it is also less likely to produce such constitutional reactions as nephrosis and gastrointestinal irritation.

● Anthralin is useful not only in psoriasis but also in the treatment of *ringworm* of the face, neck and arms; in *fungus lesions* on fingers, hands and feet; and in *dermatitis seborrhœica, pityriasis rosea,* and *alopecia areata.* Anthralin Ointment is available through pharmacies in 2-ounce collapsible tubes in four concentrations: 0.1 per cent., 0.25 per cent., 0.5 per cent., and 1.0 per cent.

ABBOTT LABORATORIES (AUSTRALIA) PTY. LTD., Box 3698, G.P.O., Sydney.

Anthralin
OINTMENT

(1, 8-Dihydroxy-Anthranol, Abbott)

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS SIMPSON, of Fairholm Street, Strathfield, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

348

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, MARCH 9, 1946. No. 10.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units 10/6
This quantity is sufficient for a series of parenteral doses.
(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units 5/6
This quantity is intended for a single parenteral dose.
(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units 4/6
This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired.
(Available also in boxes holding 6 ampoules.)

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

The Penicillin Order published—in *Gazette* No. 189 of 20th September, 1944, and in THE MEDICAL JOURNAL OF AUSTRALIA of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

The addresses of the Senior Commonwealth Medical Officers are: **NEW SOUTH WALES,** Customs House, Circular Quay, Sydney; **VICTORIA,** A.C.A. Building, 118 Queen Street, Melbourne; **SOUTH AUSTRALIA,** C.M.L. Building, 41-47 King William Street, Adelaide; **WESTERN AUSTRALIA,** 4th Floor, G.P.O., Perth; **TASMANIA,** Commonwealth Health Laboratory, Launceston; **QUEENSLAND,** Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES
PARKVILLE, N.2, VICTORIA, AUSTRALIA

THE LONELINESS OF PAIN

The first human cry in the wilderness was to summon help for the relief of pain. To-day, the first mission of medicine is still to ease the acute discomfort of pain.

In the service of pain-relief Veganin gives unusual satisfaction. A combination of codeine, acetylsalicylic acid and phenacetin in synergistic association Veganin not only mitigates promptly the suffering from headache, migraine, neuralgia, earache and other painful conditions, but also quiets the attendant nervous symptoms without causing toxic effect.

VEGANIN

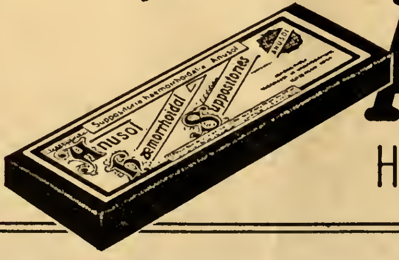
WILLIAM R. WARNER & CO. PTY. LTD., 508-528 RILEY STREET, SYDNEY, N.S.W.

KEEPING HIM ON THE JOB—

Hæmorrhoids rank comparatively high among the causes of lost "man hours." To-day, more than ever, this should be a matter of concern to physicians.

Whenever non-surgical treatment is indicated, Anusol may be used with the knowledge that it will afford the kind of relief likely to keep the patient on his job. By their emollient properties Anusol Suppositories reduce inflammation, alleviate pain and check the bleeding. They contain no narcotic or anæsthetic to give the patient a false sense of security.

William R. Warner & Co. Pty. Ltd.,
508-528 Riley Street, Sydney, N.S.W.



ANUSOL

Hæmorrhoidal Suppositories

Time E-X-T-E-N-D-E-D

A boon to Patient, Doctor and Nurse

Hyperduric ADRENALINE is one of the new series of preparations developed from the discovery that drugs injected in the form of mucates, instead of the usual salts, such as hydrochlorides, are liberated slowly and uniformly, yielding controlled prolongation of pharmacological action.

Hyperduric ADRENALINE is a solution containing 1 part of adrenaline in 1000, as mucate. It is of value in bronchial asthma and other allergic disturbances, including anaphylactic (e.g., serum) shock, besides surgical shock. It gives relief for eight to ten hours.

Hyperduric
(Trade Mark)
ADRENALINE

for PROLONGED action

Ampoules of 1·1 c.c.

Literature on request.

ALLEN & HANBURYS (AUSTRALASIA) LTD., 41 Hunter Street, SYDNEY

Stainless Acridine Chemotherapy

with

MONACRIN

BRAND OF 5-AMINOACRIDINE HYDROCHLORIDE

2% SOLUTION TABLETS
1 GRAIN (0.06 g)
MONACRIN
NON-STAINING
CHEMOTHERAPEUTIC
MONACRIN
NON-STAINING
MONACR

MONACRIN is a powerful antibacterial which inhibits the growth of a wide range of both Gram-positive and Gram-negative infective organisms.

It functions well in the presence of blood and pus. Toxicity is minimal, and its activity is maintained on extreme dilution.

Monacrin solutions are stable and stainless.

BAYER PHARMA PTY. LTD.
56 Young Street, Sydney

Distributors:
FASSETT & JOHNSON LTD., 36 Chalmers Street, Sydney

Sulphamerazine

—— NICHOLAS

NICHOLAS PTY. LTD.
ETHICAL DIVISION

℞

Sulphamerazine

In each tablet:
0.5 gramme (7.7 grains)
2-Sulphanilamido-4-methyl
pyrimidine.

Nicholas

In bottles of 25, 100 and 500 tablets

A NICHOLAS ETHICAL PRODUCT

shortens *healing time*

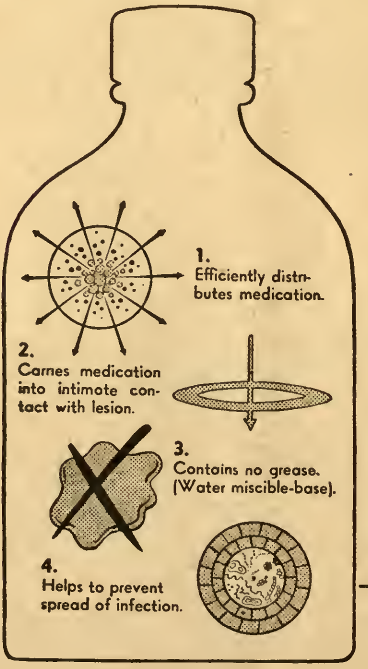
FOR IMPETIGO CONTAGIOSA

Two types of impetigo contagiosa of Tilbury Fox can be differentiated, the streptococcic and the staphylococcic. A third mixed type has also been suggested, caused by the combined action of streptococci and staphylococci.

While the streptococcic type of infection responds to ointments containing ammoniated mercury, those of the staphylococcic type frequently fail to improve on these ointments. For the latter type drying lotions are superior.

Alulotion, Ammoniated Mercury with Kaolin—Wyeth, combines the bactericidal action of ammoniated mercury with the drying effect of aluminium hydroxide and kaolin. It is a clean, effective treatment for all types of impetigo contagiosa. Clinical evidence has shown that Alulotion cleans up impetigo contagiosa in less time than older methods.

This unique water-miscible lotion can also be prescribed effectively in the treatment of various other skin infections such as ecthyma, folliculitis and the secondary infections associated with eczema, seborrheic dermatitis and dermatitis due to irritants.


1.
Efficiently distributes medication.
2.
Carries medication into intimate contact with lesion.
3.
Contains no grease. (Water miscible-base).
4.
Helps to prevent spread of infection.

ALULOTION

AMMONIATED MERCURY with KAOLIN

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

AL5M

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, MARCH 9, 1946. No. 10.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.
- Enteric Fever due to Bacterium Enteritidis Var. Blegdam (Salmonella Blegdam): A Series of Fifty Cases in Australian Soldiers from New Guinea, by Frank Fenner, M.B.E., and A. V. Jackson .. 313
- Preliminary Report on Strains of Salmonella Blegdam Causing Infections in Humans in New Guinea, by Nancy Atkinson .. 326
- The Sociological Aspects of Community Housing, by Irene B. Sebire, M.B., B.S., D.P.M. .. 327
- Compound Fractures of the Extremities due to Gunshot Wounds: The Early Results of Treatment in the Field Aided by Penicillin Therapy, by Thomas F. Rose and Arthur Newson .. 330

REPORTS OF CASES—
- A Case of Addison's Suprarenal Syndrome of Primary Pituitary Origin, by W. R. Lang .. 335

REVIEWS—
- Venereal Disease .. 336
- Outlines of Physical Therapy .. 336
- Surgical Pathology .. 336

LEADING ARTICLES—
- "The Story of a Great Achievement" .. 337

CURRENT COMMENT—
- Murmurs from Turbulent Flow .. 339
- Tick Paralysis .. 339
- Jean-Paul Marat: Visionary or Villain? .. 340
- The Medical Annual .. 341

ABSTRACTS FROM MEDICAL LITERATURE—
- Therapeutics .. 342
- Neurology and Psychiatry .. 342

BRITISH MEDICAL ASSOCIATION NEWS— Page.
- South Australian Branch News .. 344
- Notice .. 344

SPECIAL CORRESPONDENCE—
- New Zealand Letter .. 344

MEDICAL PRACTICE—
- Medical Practitioners and Evidence at Inquests .. 345

CORRESPONDENCE—
- The Spelling of Words .. 345
- Wounds Caused by Small Fish .. 345
- The Treatment of Inguinal Hernia .. 345
- The Intervertebral Disk .. 346
- "Beach Foot" .. 346
- Australia and Science: The University of Sydney and Scientists .. 346

NAVAL, MILITARY AND AIR FORCE—
- Appointments .. 347

NOMINATIONS AND ELECTIONS .. 347

POST-GRADUATE WORK—
- A Film Afternoon at Sydney .. 348

CORRIGENDUM .. 348

A MEMORIAL TO THE LATE PROFESSOR JAMES THOMAS WATSON .. 348

MEDICAL APPOINTMENTS .. 348

DIARY FOR THE MONTH .. 348

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 348

EDITORIAL NOTICES .. 348

ENTERIC FEVER DUE TO BACTERIUM ENTERITIDIS VAR. BLEGDAM (SALMONELLA BLEGDAM): A SERIES OF FIFTY CASES IN AUSTRALIAN SOLDIERS FROM NEW GUINEA.

By FRANK FENNER, M.B.E.,
Major, Australian Army Medical Corps,
AND
A. V. JACKSON,
Major, Australian Army Medical Corps.

A NUMBER of cases of enteric fever have been diagnosed in Australian army medical units since military operations began in New Guinea in 1942. A few were caused by *Bacterium typhosum*, *Bacterium paratyphosum A* or *Bacterium paratyphosum B*, but the majority were infections with *Bacterium enteritidis*. Strains isolated in twenty-three of these cases were further investigated at the Institute of Medical and Veterinary Science, Adelaide, and all were found to be *Bacterium enteritidis* var. *blegdam.*

The cases here described were dealt with at a number of Australian army medical units, the only series of any size comprising the patients infected in a small outbreak which occurred in an infantry brigade at Buna early in 1943. One of us (A.V.J.) was pathologist at the Australian general hospital where these patients were treated, and undertook a detailed study of the clinical pathology. The organisms isolated from these fourteen cases were identical as far as could be determined in a field laboratory. Two of the strains (from Cases XXIX and XXX) were sent to Miss Nancy Atkinson, Institute of Medical and Veterinary Science, Adelaide, for antigenic analysis, and both were identified as *Bacterium enteritidis* var. *blegdam.*

Atkinson⁽¹⁾ has prepared a preliminary report on the strains of *Bacterium enteritidis* var. *blegdam* isolated in the cases described in this paper.

Definition.

Bacterium enteritidis var. *blegdam* can cause in man a severe disease, which in the absence of complications lasts about three weeks and is characterized by fever of a fortnight's duration, by toxæmia, by a relatively slow pulse rate, by abdominal distension, and by diarrhœa. Localization of infection in the urinary bladder, bones, lungs, and serous cavities is frequent, however, and may prolong the fever for many weeks. Bacteriæmia is probably invariably present in the early stages, and after the first week the organism can often be found in the fæces and urine.

Rarely the infection may cause recurrent diarrhœa or dysentery, without evidence of blood-stream invasion, and the organism has been recovered from a healthy native labourer (Case N I) during a rectal swab survey of a native labour camp at Port Moresby.

Geographical Distribution.

The first cases recognized occurred among soldiers who had been fighting in the Owen Stanley Ranges in New Guinea at the end of 1942. Early in the next year a number of cases occurred among troops fighting in the Buna area. The next small outbreak was associated with the Huon Peninsula campaign a year later.

Sporadic cases have occurred in various parts of New Guinea, including Milne Bay, Salamaua, Lae, the Ramu Valley, Madang and Aitape, and on Bougainville Island.

Eight of the cases described in this paper were diagnosed in Australia, but all the patients had recently returned from New Guinea. Apart from these cases, *Bacterium enteritidis* var. *blegdam* has never been discovered in the thousands of cultural examinations of human stools carried out in military hospitals on the Australian mainland during the last five years.

Bacterium enteritidis var. *blegdam* has been isolated from natives in the Moresby, Dobodura and Finschhafen areas of New Guinea, and on Bougainville Island. Clinical records are scanty; but in natives the disease appears to run a course similar to that seen in Europeans.

Since August, 1943, the Japanese have reported the frequent occurrence of enteric fever due to "Gärtner's bacillus" in New Britain, New Guinea and the Solomon Islands. *Bacterium enteritidis* var. *blegdam* was isolated from the blood of a Japanese prisoner of war who was captured in the final stages of the Buna campaign. He was suffering from a typhoid-like fever and subsequently died, but no post-mortem examination was carried out.

In September, 1944, Captain E. French(2) isolated *Bacterium enteritidis* var. *blegdam* from mice and guinea-pigs in a spontaneous epidemic in the animal house of the Base Military Hospital, Melbourne, Victoria. The organism had not been isolated previously from either human patients or laboratory animals at this hospital.

Epidemiology.

The epidemiology of the cases of enteric fever described in this paper has not been carefully studied. The highest incidence was in infantry troops fighting in the coastal jungles of Buna and the Huon Peninsula; but a few cases have occurred among soldiers living in static units in which sanitary arrangements were comparatively good.

Thirteen soldiers belonging to different units of one Australian infantry brigade were evacuated to hospital with enteric fever due to *Bacterium enteritidis* var. *blegdam* between January 26 and February 18, 1943. Questioning of these soldiers revealed that about a fortnight before the onset each of them had passed through the staging camp at Soputa.

A few patients were infected at Port Moresby while waiting to be returned to Australia after the end of the Papuan campaign. It is possible that the source of infection in these cases was an unrecognized carrier from the Soputa outbreak.

Prior to the war, detailed bacteriological investigations were carried out in comparatively few cases of sickness in New Guinea natives. Lieutenant-Colonel C. Backhouse,(3) who was for about fifteen years Medical Officer in Charge of the Government Health Laboratory at Rabaul, said that to his knowledge *Bacterium enteritidis* had never been isolated from the blood or fæces of any patients, European or native, prior to the war. However, since 1943 several cases of infection with *Bacterium enteritidis* var. *blegdam* have been diagnosed among the small number of natives admitted to Australian general hospitals in various parts of New Guinea or the Solomon Islands.

The causative organism is excreted in large numbers and for a considerable period in both the fæces and the urine in overt cases. Cross-infection has occurred in hospital wards, owing to failure to recognize the disease early and institute strict isolation. Patients with recurrent diarrhœa (for example, Cases I and XLII) may be ambulant and excrete the organism in the fæces for a long time.

The isolation of *Bacterium enteritidis* var. *blegdam* from macroscopically normal stools during and after convalescence indicates that convalescent and healthy carriers may also be sources of infection. *Bacterium enteritidis* var. *blegdam* was isolated from a healthy Papuan native (N I) during a rectal swab survey of a native labour camp at Port Moresby.

Captain E. French(2) has supplied the following information on an outbreak of *Bacterium enteritidis* var. *blegdam* infections among laboratory animals at the Base Military Hospital in Melbourne, Victoria.

> In September, 1944, an epidemic disease appeared spontaneously amongst the laboratory mice. It affected mice of all ages and both sexes, and the overall mortality in infected cages was about ninety per cent. All post-mortem cultures from the heart blood, spleen, and liver of mice found dead, and of moribund animals killed with chloroform, yielded pure cultures of *Bacterium enteritidis* var. *blegdam*. The epidemic had been maintained by the caging together of young mice from infected and uninfected cages. Segregation of mice from the infected cages was followed by the rapid disappearance of the disease. It is not known whether infections again became apparent when strict segregation ceased.
>
> As the epidemic in the mice waned cases appeared amongst guinea-pigs housed in an adjacent room. The overall mortality in guinea-pigs was about twenty per cent. Post-mortem cultures of the heart blood yielded a pure growth of *Bacterium enteritidis* var. *blegdam*. The epidemic ceased spontaneously without segregation of the guinea-pigs.

Rats and mice abound in most military camps in New Guinea; but no investigations have been carried out to see whether they may be carriers of *Bacterium enteritidis* var. *blegdam*.

It seems probable that the human carrier is the most important source of infection, and it is possible that contamination of food by the excreta of rodents may cause sporadic cases.

Pathology.

Five deaths due to *Bacterium enteritidis* var. *blegdam* are known to have occurred; three of the subjects were Australian soldiers, one was a Solomon Islands native, and one was a Japanese prisoner of war.

Only one brief post-mortem report is available. The clinical history of this case is described later in this paper (Case XXXVIII), and Figure I shows the temperature chart. The significant pathological changes were as follows. The cardio-vascular system was normal, except for slight atheroma in the ascending aorta and the orifice of the left coronary artery. In the respiratory system the trachea and bronchi were congested. There was almost complete consolidation of the basal lobes of both lungs, with early bronchopneumonic consolidation in the upper lobes. The liver was moderately enlarged, firm and congested. The spleen was enlarged, congested and friable. The urogenital system was normal, except for slight swelling and congestion of both kidneys. In the gastro-intestinal tract, examination of the lower part of the ileum revealed considerable swelling and congestion of Peyer's patches, but no ulceration. The mucosa was normal except for slight congestion in the distal nine inches. In the mucosa of the caecum and the ascending colon moderate congestion was present, and in that of the lower part of the colon and the rectum, slight congestion. The lymphoid follicles of the caecum and the ascending colon were swollen and inflamed.

Unfortunately, no bacteriological examination of post-mortem material was carried out, and although sections were prepared from a number of organs, they have been lost, and no description of the histological changes is available.

Case Records.

The significant features of the fifty cases among Australian soldiers described in this paper are shown in Table I. The cases are grouped into three categories: simple diarrhœa (Case I); salmonella fever without complications (Cases II to XXIII); and salmonella fever with septic complications (Cases XXIV to L). Cases among New Guinea natives are not included in Table I.

Symptomatology.

Three clinical types of salmonella infection are commonly recognized in man:(4) salmonella gastro-enteritis, salmonella fever, and a septicæmic form in which localization of infection occurs (the "septico-pyæmic" form).

Salmonella Gastro-Enteritis.—Salmonella gastro-enteritis is the well-known "salmonella food-poisoning" syndrome, with a short incubation period, abrupt onset, abdominal pain, vomiting and diarrhœa. None of the cases of our series conformed with this description. Diarrhœa was the only symptom in one case.

The patient in Case I had suffered from recurrent diarrhœa for six weeks before his admission to hospital. Several courses of sulphaguanidine had been given at the regimental aid post but had failed to control the diarrhœa. The stools consisted of liquid fæces with a few flecks of mucus. Sigmoidoscopic examination revealed hyperæmia, but no ulceration of the mucous membrane. *Bacterium enteri-*

TABLE I.
Details of Investigations on Fifty Cases in Australian Soldiers.[1]

Case Number.	Date of Onset.	Days of Fever.	Cultural Investigations.									Leucocytes per Cubic Millimetre.		Agglutinations with *Bacterium Enteritidis* Var. *Blegdam.*		Malaria Parasites.		Complications.		Remarks.
			Blood.		Fæces.		Urine.		Other Material.											
			Day	Result.	Day	Result.	Day	Result.	Material.	Day	Result.	Day	Result.	Day	Result.	Day	Result.	Week.	Type.	
I	17. 1.44	0			2 14 24	+P −N −N	2 24	−N −N				6	5,600	22	1/500					Recurrent diarrhœa for six weeks.
II	13. 1.43	19	8 19	− −	8 12 17 31	+P +P −P −P	8 15	−N −N				10 34	16,000 6,800			24	*P.v.*			
III	3. 2.43	9			29 40 55	+P +P N										7	*P.f.*			
IV	5. 2.43	20	7	+	14 22 32	− − −	22 32	−N −N						41	1/25					
V	9. 2.43	33	9	+	18 33	+P +P	28 35 41	+N − −												Rose spots on abdomen on fifteenth day.
VI	18. 2.43	15	11	−	8	+	8	−				20	4,250	37	1/25					
VII	22. 3.43	12	8 13	− −	8 12 19	+P (*a*)[2] −P +N	5 11 15	N −N −N				14	10,400	24	1/500	2	*P.v.*			(*a*) Confirmed *blegdam.*
VIII	24. 3.43	12	10 17	+ (*a*) −	10 16 17 19 24	−N −N −N −N −N	10 18	−N −N								4	*P.v.*			(*a*) Confirmed *blegdam.*
IX	8.10.43	9			8 10 12	+P +P N										3	*P.f.*			
X	14.10.43	5	3	+ (*a*)	3 8 11 12 13 23 27 30 44 53 57 61	−P −P −P +P (*a*) +P −N −N +N +N −N −N −N	3 10 12 23 29 34 64	−N −N −N −N −N −N −N				4 21	9,500 9,500			−2	*P.f.*			(*a*) Confirmed *blegdam.*
XI	14.10.43	34			16 46 49 56 61	+P −N −N −N −N	14 39	−N −N				16	8,400							
XII	26.10.43	18	14	+ (*a*)	33	−P			Wound. Swab.	16 29	− (*b*)[2] −	8 14 17	10,000 12,500 15,000			2	*P.v.*			Admitted to hospital with severe compound fracture of right tibia, which became infected. Three weeks after injury developed salmonella fever. (*a*) Confirmed *blegdam*; (*b*) *Proteus vulgaris* and *Pseudomonas pyocyanea* grown.
XIII	24.12.43	13	12	+ (*a*)	18 28 34	− −P −	18 34	− −				11 15 30	3,400 4,100 4,500	45	1/250	8	*P.v.*			(*a*) Confirmed *blegdam.*

---

[1] All cultural examinations: "+" = *Bacterium enteritidis* isolated; "−" = *Bacterium enteritidis* not isolated. Fæces: "N" = stool normal macroscopically and microscopically; "P" = stool abnormal macroscopically and microscopically. Urine: "N" = urine microscopically normal; "P" = urine contained abnormal cellular deposit; when neither N nor P is indicated, no data were available. Malaria parasites: "*P.v.*" = *Plasmodium vivax*; "*P.f.*" = *Plasmodium falciparum*.

[2] The letters (*a*), (*b*), (*c*), (*d*), (*e*) refer to the corresponding entries in the "Remarks" column of this table.

TABLE I.—*Continued.*

Details of Investigations on Fifty Cases in Australian Soldiers.[1]—Continued.

Case Number.	Date of Onset.	Days of Fever.	Cultural Investigations.									Leucocytes per Cubic Millimetre.		Agglutinations with *Bacterium Enteritidis* Var. *Blegdam.*		Malaria Parasites.		Complications.		Remarks.
			Blood.		Fæces.		Urine.		Other Material.											
			Day	Result.	Day	Result.	Day	Result.	Material.	Day	Result.	Day	Result.	Day	Result.	Day	Result.	Week.	Type.	
XIV	26.12.43	14	12	—	12 23 31	—P +N —	26	—				15 26 36	6,800 6,000 8,700	44	1/250	4 13	*P.v.* *P.f.*			
XV	6. 1.44	6			7 13 21 34 39 44	—P +N +N — — —	39 44	—N —N				14	6,400	32	1/25	4	*P.f.*			
XVI	6. 1.44	12 then low fever to 99° F. for several days.	11	+	7 12 24 37 43 56 58 62 67	+P + + + + — — — —	11 37 56 58 62 67	— — — — — —				14	6,400	32	1/250	37	*P.v.*			
XVII	8. 1.44	16	11	+	12	—N	7 9 11	N — —				4 9	2,300 4,000							Erythematous rash on trunk on first day, becoming macular on second day and purpuric on elbows and groin on fourth day.
XVIII	9. 1.44	15	5	+	11 22 24 25 30	— — — — —	9 31	— N				4	2,700	29	1/250	5	*P,f.*			
XIX	21. 1.44	13			8 17 19 20 27 29 31	+P (*a*)[2] —N —N —N —N —N —N	27 29 31	—N —N —N								—11	*P.f.*			Rash on fifth day—similar to that of dengue fever. (*a*) Confirmed *blegdam.*
XX	23. 4.44	8	1 6	— +	6 26	—P —N	2 8 9 14	—N —N —N —N				2 6	15,000 9,000							Admitted to hospital eight days earlier with dermatitis due to quinine sensitivity. Quinine given intravenously on second day of salmonella fever caused acute exfoliative dermatitis.
XXI	28. 4.44	10	8	+	11	—N	11	—N				8	10,000							
XXII	2. 5.44	12	9	+			10 12	N —N				8	8,300							
XXIII	24. 3.45	7	7	+ (*a*)	7 15 21	—N —N —N	6 15 21	—N —N —N				5	4,000			—2	*P.v.*			(*a*) Confirmed *blegdam.*
XXIV	17.12.42	9	6	+	6	+P	6	—				6	7,400			3	*P.v.*	Second (6th day). (9th day).	Bilateral bronchopneumonia. Death.	Rose spots on abdomen, trunk and limbs on sixth day.
XXV	7. 1.43	12	8	+ (*a*)	8 16 44 60	+P (*a*) +N —N —N	12 16 23 31 37 44 60	+P P P +P +P —N —N				8 60	7,400 9,600			5	*P.v.*	Second.	Cystitis (*b*).	(*a*) Confirmed *blegdam.* (*b*) Brisk hæmaturia lasting for two days was the first sign of bladder involvement.

---

[1] All cultural examinations: "+" = *Bacterium enteritidis* isolated; "—" = *Bacterium enteritidis* not isolated. Fæces: "N" = stool normal macroscopically and microscopically; "P" = stool abnormal macroscopically and microscopically. Urine: "N" = urine microscopically normal; "P" = urine contained abnormal cellular deposit; when neither N nor P is indicated, no data were available. Malaria parasites: "*P.v.*" = *Plasmodium vivax*; "*P.f.*" = *Plasmodium falciparum.*

[2] The letters (*a*), (*b*), (*c*), (*d*), (*e*) refer to the corresponding entries in the "Remarks" column of this table.

TABLE I.—*Continued.*

Details of Investigations on Fifty Cases in Australian Soldiers.[1]—Continued.

Case Number.	Date of Onset.	Days of Fever.	Cultural Investigations. Blood.		Fæces.		Urine.		Other Material.			Leucocytes per Cubic Millimetre.		Agglutinations with *Bacterium Enteritidis* Var. *Blegdam.*		Malaria Parasites.		Complications.		Remarks.
			Day	Result.	Day	Result.	Day	Result.	Material.	Day	Result.	Day	Result.	Day	Result.	Day	Result.	Week.	Type.	
XXVI	20. 1.43	45	33	–					Pleural fluid.	27 40	+ (*a*)[2] +							Fourth.	Empyema.	Penetrating gunshot wound, left side of chest. Unexplained fever after fourth day, then hæmopneumothorax, then emypema. (*a*) Semi-purulent fluid growing pure culture of *Bacterium enteritidis.*
XXVII	26.1.43	43	40	–	42 71 80 96	–N –N –N –N	26 40 42 55 68 77	P +P +P –N –N –N						51	1/1000	9	*P.v.*	Second. Third. Fourth. Fifth.	Periostitis, left ulna (*a*). Left epididymo-orchitis. Cystitis (*b*). Right epididymo-orchitis.	(*a*) X-ray examination during third and sixth weeks, no abnormality. (*b*) First sign of cystitis was hæmaturia, which lasted two days.
XXVIII	28. 1.43	30	26	—	12 13 118	+P +P(*a*) –N	13 24	P –N				22 39	5,000 8,000			8	*P.v.*	Second.	Cystitis.	(*a*) *Bacterium dysenteriæ* Flexner also isolated from stool.
XXIX	1. 2.43	26	8 22	+ (*a*) –	26 36	– + (*a*)	14 18 21 49	+P (*a*) +P +P –				15	16,550	41	1/250	40	*P.v.*	Second. Third.	Periostitis, left humerus. Cystitis (*b*) and right epididymo-orchitis.	(*a*) Confirmed *blegdam.* (*b*) First sign of cystitis was hæmaturia.
XXX	1. 2.43	60	11 40	+ (*a*) –	9 26 36 72	–P –N –N –N	9 26 36 72	–N –N –N –N	Pleural fluid. Sputum.	36 48 40	– (*b*) – –	22	9,050	41	1/1000	5	*P.v.*	Fourth. Fourth.	Bronchopneumonia. Pleural effusion.	(*a*) Confirmed *blegdam*; emulsion used for agglutination reactions. (*b*) Pleural fluid was clear, straw-coloured and sterile.
XXXI	2. 2.43	56	32	–	32 34	–N –N	31 32 57	+P +P –						43	1/500	28	*P.v.*	Second. Second. Second. Sixth.	Periostitis, left acromion. Bronchopneumonia. Cystitis. Perichondritis, left costal cartilages.	Faint rash on abdomen on twelfth day.
XXXII	3. 2.43	65	22	–	34 48	– +	65	–	Pleural fluid. Pleural fluid. Pleural fluid. Sputum.	30 33 46 57 46	+ (*a*) + + + + (*b*)	26 32	7,950 12,000	39	1/1000	2	*P.v.*	Second. Third.	Bronchopneumonia. Empyema, left lung.	(*a*) Pleural fluid was purulent and gave a pure growth of *Bacterium enteritidis.* (*b*) *Bacterium enteritidis* isolated from sputum.
XXXIII	4. 2.43	6	19	–	23 31 38 46	+ + + –	13 18 25 29 46	+P +P – – –N				12	10,900	42	1/500			Second.	Cystitis, right brachial arteritis.	
XXXIV	5. 2.43	24	7 20	+ +	22	+	20 40 51 61 70 86 150	+P +P +P +P +P – +P (*a*)				18	3,900	41	1/500			Third.	Cystitis.	Rose spots on seventh day. Persistent cystitis treated with sulphadiazine. After one week's treatment urine was clear and sterile, but later relapsed and culture was obtained five months later. (*a*) Cultures obtained from bladder and left kidney.

---

[1] All cultural examinations: "+" = *Bacterium enteritidis* isolated; "–" = *Bacterium enteritidis* not isolated. Fæces: "N" = stool normal macroscopically and microscopically; "P" = stool abnormal macroscopically and microscopically. Urine: "N" = urine microscopically normal; "P" = urine contained abnormal cellular deposit; when neither N nor P is indicated, no data were available. Malaria parasites: "*P.v.*" = *Plasmodium vivax*; "*P.f.*" = *Plasmodium falciparum.*

[2] The letters (*a*), (*b*), (*c*), (*d*), (*e*) refer to the corresponding entries in the "Remarks" column of this table.

TABLE I.—*Continued.*

Details of Investigations on Fifty Cases in Australian Soldiers.[1]—Continued.

Case Number.	Date of Onset.	Days of Fever.	Cultural Investigations.									Leucocytes per Cubic Millimetre.		Agglutinations with *Bacterium Enteritidis* Var. *Blegdam*.		Malaria Parasites.		Complications.		Remarks.
			Blood.		Fæces.		Urine.		Other Material.											
			Day	Result.	Day	Result.	Day	Result.	Material.	Day	Result.	Day	Result.	Day	Result.	Day	Result.	Week.	Type.	
XXXV	16. 2.43	70	46	–	46	–	43 59 75	+P +P –						44	1/1000			Fourth	Cystitis and epididymo-orchitis.	Cystitis treated with sulphadiazine. After one week's treatment the urine was clear and sterile.
XXXVI	17. 2.43	21	9	+	20	–	20 22 37 47	+P +P – –				9 13	4,000 10,700	28	1/500	2	*P.v.*	Third.	Cystitis.	
XXXVII	28. 3.43	22	10	+	10	+	10	+	Pus from buttock abscess.	19	+ (*a*)[2]	8 14	1,300 5,400	38	1/2500	3	*P.v.*	Second. Third.	Cystitis Abscess of buttock	(*a*) Patient bruised buttock whilst delirious. Later a large deep abscess developed in this site. Pus from it gave a pure growth of *Bacterium enteritidis*.
XXXVIII	19. 3.43	13	9	+ (*a*)	9	+P (*a*)	10 12	–P +P (*a*)	Sputum (*b*).	12	No streptococci or pneumococci.					5	*P.v.*	Second (10th day). (12th day). (13th day).	Cystitis. Bronchopneumonia. Death.	(*a*) Confirmed *blegdam*. (*b*) Sputum not examined for *Bacterium enteritidis*.
XXXIX	13. 9.43	10 (*a*)	28	–	29 38 63 71 93 94 110 118 128 168 174 177 208	+N (*b*) +P +N +N +N +N +N –N +P (*c*) –N +N +N +N	45 63 71	N –N –N	Bile from duodenum.	75 249	– + (*b*)	25 31 39 93	5,000 13,800 9,800 7,600			116	*P.v.*	Third and recurrent. Fifth.	Cholecystitis. Left orchitis.	(*a*) After one week without fever it recurred for three weeks. (*b*) Confirmed *blegdam*. (*c*) Vegetative forms of *Entamœba histolytica* present.
XL	26. 9.43	36	21 37	– –	18 32 46 52 59 71 79 81 85	+P +N +N +N +N +N –N –N –N	14 16 17 18 21 24 26 32 47 71 79	N P P P +P N –N +N –N –N –N	Bile from duodenum.	65	–	15 37	12,700 10,000	26 37	1/320 1/1280	10	*P.f.*	Third	Cystitis.	
XLI	15.11.43	17			6 23 36 40 78 96	+P (*a*) +N –N +N –N –N	23	–N				16	7,500			–4	*P.f.*	Third.	Left epididymo-orchitis.	Admitted to hospital with hepatitis. *Plasmodium falciparum* in blood film. Salmonella fever commenced ten days after onset of hepatitis. (*a*) Confirmed *blegdam*.
XLII	29.12.43	18			240 300 320 340 365 372 379	+P (*a*) +P (*b*) + + – – –			Pus from gall-bladder Bile from gall-bladder. Wound infection.	14 358 365	Smear: Gram-negative rods. + (*b*) +					8	*P.f.*	Second.	Empyema of gall-bladder.	(*a*) Days approximate; see text for full description of this case. (*b*) Confirmed *blegdam*.

---

[1] All cultural examinations: "+" = *Bacterium enteritidis* isolated; "–" = *Bacterium enteritidis* not isolated. Fæces: "N" = stool normal macroscopically and microscopically; "P" = stool abnormal macroscopically and microscopically. Urine: "N" = urine microscopically normal; "P" = urine contained abnormal cellular deposit; when neither N nor P is indicated, no data were available. Malaria parasites: "*P.v.*" = *Plasmodium vivax*; "*P.f.*" = *Plasmodium falciparum*.

[2] The letters (*a*), (*b*), (*c*), (*d*), (*e*) refer to the corresponding entries in the "Remarks" column of this table.

Table I.—*Continued.*

Details of Investigations on Fifty Cases in Australian Soldiers.[1]—Continued.

Case Number.	Date of Onset.	Days of Fever.	Cultural Investigations.									Leucocytes per Cubic Millimetre.		Agglutinations with *Bacterium Enteritidis* Var. *Blegdam.*		Malaria Parasites.		Complications.		Remarks.
			Blood.		Fæces.		Urine.		Other Material.											
			Day	Result.	Day	Result.	Day	Result.	Material.	Day	Result.	Day	Result.	Day	Result.	Day	Result.	Week.	Type.	
XLIII	28. 2.43	5 (*a*)[2]			1 3	P +P (*b*)	18 26 32	+P (*b*) P P						7 38	1/40 1/160	3	*P.v.*	Third.	Cystitis.	(*a*) Recurrence of fever with cystitis in fourth week. (*b*) Confirmed *blegdam.*
XLIV	29.12.43	16			8 13 14 34 41 48 55	P P +P –N –N –N –N	31 34 48 55	–N +P –N –N				11	3,300					Second. ?	Bronchopneumonia. Cystitis (*a*).	(*a*) Clinical notes incomplete, laboratory facilities inadequate early in illness.
XLV	9. 1.44	9 (*a*)	5	+ (*b*)	4 12 28 36 38 70 76	P + (*b*) + + + – –	12 19 28 36 38 69	–N +P (*b*) – – – –				4 13	6,400 9,200	32	1/1250	–6	*P.f.*	Third. Third.	Cystitis. Right epididymo-orchitis.	(*a*) Recurrence of fever with onset of cystitis. (*b*) Confirmed *blegdam.*
XLVI	17. 1.44	19			12 24 36 45 48	+N –N –N –N –N	11 13 24 33 36 45 48	P +P +P –N –N –N –N				10	10,700					Second.	Cystitis	Admitted to hospital with jaundice and fever.
XLVII	27. 2.44	21	6	+	8 11 25 34 40 53 56 58	+P +N +N +N +P –N –N –N	6 8 9 25 33 51 54 56 58	N P +P +P –N –N –N –N –N				8	5,300			1	*P.f.*	Second.	Cystitis.	
XLVIII	31. 3.44	25	9 57	+ –	12 20 25 37 41 43 47	+P – –N –N –N –N +N	8 9 10 12 18 27 29 31 39 41 45 55 74	P P P +P N +P +P – +P –N –N –N –N	Sputum.	60	Pneumococci.	10 74 78	2,000 10,000 7,000			8	*P.f.*	Second. Ninth.	Cystitis. Bronchopneumonia (*a*)	(*a*) Pneumococcal bronchopneumonia contracted during convalescence.
XLIX	10. 9.44	Initial 27 (*a*) Afebrile 16 Febrile 4 Afebrile 11 Febrile 56	58 75	+ (*b*) –	39 54 56 58 60 188	–P –P –N –N –N –N			Sputum. Pleural fluid. Pericardial fluid. Wound swab.	80 94 98 96 108 124	– – (*c*) – (*c*) + (*b*) (*d*) – (*e*) –	21 48 56 58 60 82 84 89 95 102 112 114 186	4,500 4,100 3,200 8,100 4,200 7,500 10,700 12,200 15,500 11,200 7,800 7,800 12,600					Eighth. Ninth. Twelfth.	Pneumonia. Pericarditis. Pleural effusion.	(*a*) Admitted to hospital with jaundice and fever. Exact time of commencement of salmonella fever hard to determine. (*b*) Confirmed *blegdam.* (*c*) Clear, straw-coloured fluid. (*d*) Purulent fluid under pressure. (*e*) Faintly turbid. *Pseudomonas pyocyanea* and *Bacterium coli* present.
L	26.12.44	28	10	+	26 27	–N –N	23 29	–N –N				5 17 31	5,200 17,800 10,000					Second.	Periostitis in region of left sacro-iliac joint.	

---

[1] All cultural examinations: "+" = *Bacterium enteritidis* isolated; "–" = *Bacterium enteritidis* not isolated. Fæces: "N" = stool normal macroscopically and microscopically; "P" = stool abnormal macroscopically and microscopically. Urine: "N" = urine microscopically normal; "P" = urine contained abnormal cellular deposit; when neither N nor P is indicated, no data were available. Malaria parasites: "*P.v.*" = *Plasmodium vivax*; "*P.f.*" = *Plasmodium falciparum.*

[2] The letters (*a*), (*b*), (*c*), (*d*), (*e*) refer to the corresponding entries in the "Remarks" column of this table.

tidis was isolated from the fæces. After a fortnight's rest in bed and a course of sulphamerazine, the diarrhœa ceased and attempted culture of the fæces failed to grow any pathogenic organisms. The patient's serum agglutinated to a dilution of 1/500 a formolized emulsion of *Bacterium enteritidis* var. *blegdam.*

On Bougainville Island *Bacterium enteritidis* var. *blegdam* was isolated from the fæces of a native child, aged two years (Case N II), who suffered from two attacks of dysentery and fever, each lasting for about three days, at an interval of two weeks.

Salmonella Fever.—Salmonella fever resembles typhoid fever; pyrexia, malaise, leucopenia and a relatively slow pulse rate are present. Of the 50 cases of this series, 22 conformed with this syndrome. The following composite case history is representative. The infected soldier reports to the regimental aid post with a history of headache, malaise, anorexia, insomnia, aches and pains, and occasional shivers for two or three days. The onset and development of these symptoms are gradual. Examination reveals that the man is obviously ill, with a temperature of 102° to 103° F. and a relatively slow pulse rate. The face is flushed, the skin moist and the tongue heavily furred. No enlargement of the lymphatic glands can be detected, but the spleen may be palpable. Examination of the blood for malarial parasites gives negative results. During the next few days the fever continues unabated, and signs of toxæmia become more evident. The leucocyte count reveals a neutrophile leucopenia, and *Bacterium enteritidis* can be grown on culture from the blood. Early in the second week the abdomen becomes distended and tender, and diarrhœa occurs, the stools consisting of liquid fæces with a little mucus. *Bacterium enteritidis* can be isolated from these stools. At the end of the second week the patient's condition improves, diarrhœa ceases and the temperature falls by lysis. Convalescence is uneventful, but *Bacterium enteritidis* can be grown on culture from apparently normal stools for a further three weeks. In the two fatal cases among Australian soldiers more severe manifestations of salmonella fever were present, characterized by great toxæmia and rapid march of symptoms. Neither patient lived long enough for complications to become apparent, but in both of them bronchopneumonia occurred, and was probably caused by *Bacterium enteritidis.*

In Case XXIV the patient was engaged in fighting in the Owen Stanley Ranges. He contracted scrub typhus early in November, 1942, and had suffered from persistent diarrhœa for seven weeks prior to evacuation to Australia on December 14, 1942. He was ill on board ship and was admitted to hospital on his arrival in Australia, with a history of headache and rigors for the past three days. On admission to hospital he was obviously ill; the spleen was enlarged and tender and the tongue was heavily furred. Examination of a blood film revealed numerous trophozoites of *Plasmodium vivax.* Intensive antimalarial therapy had no effect on the fever or toxæmia, both of which increased in severity. The temperature rose to 106·8° F., the abdomen became tender and distended, and the bowels acted freely. On the sixth day of the disease examination of blood films revealed no malaria parasites, but cultures of blood and fæces yielded *Bacterium enteritidis.* Rose-pink spots appeared on the abdomen and the right foot at this stage. The rash later became extensive, the individual macules becoming confluent in some areas. The respiration rate increased and signs of patchy consolidation were present in both lungs. The patient became comatose and died on the ninth day of the disease.

The patient in Case XXXVIII was admitted to hospital in Australia ten days after leaving New Guinea, with a history of headache and fever of three days' duration. Moderate numbers of trophozoites of *Plasmodium vivax* were found in a thick blood film, but the fever did not respond to routine antimalarial therapy. His clinical condition rapidly deteriated, he became stuporose, the abdomen became distended and tender, and 12 fluid motions were passed. Culture from blood and fæces yielded *Bacterium enteritidis* var. *blegdam,* and the same organism was later obtained from the urine. Signs of bilateral pulmonary consolidation were found on the eighth day and death occurred on the thirteenth day.

The temperature chart of this patient, with pulse rate and respiratory rate, is shown in Figure I, and a brief autopsy report is given in the section "Pathology". There was a history of syphilitic infection and the Kline precipitation test yielded a positive result.

Two cases of uncomplicated salmonella fever have been seen among New Guinea natives (Cases N III and N IV).

Septicæmic Type with Localization of Infection.—In the septicæmic type with localization of infection, the organism spreads through the blood stream and becomes localized in various parts of the body. Twenty-seven cases fall into this category. During the first two weeks the course of the illness resembled salmonella fever, but from that stage onwards various local septic complications became evident, and fever was usually greatly prolonged. The commonest complication was cystitis. Periostitis, perichondritis, epididymo-orchitis, abscess in the buttock, cholecystitis, pericarditis, arteritis, bronchopneumonia and empyema were all recorded. Abscesses of the buttock and the breast were seen in New Guinea natives (Cases N V and N VI respectively).

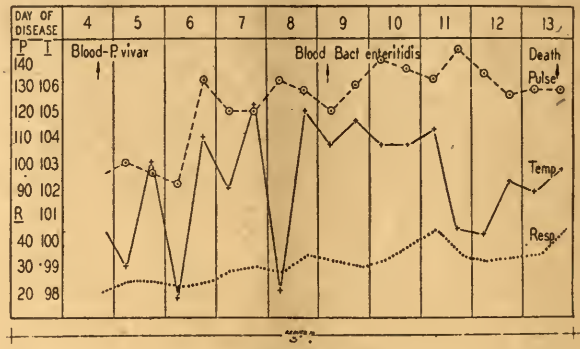


FIGURE I.

Temperature chart in Case XXXVIII, a severe infection ending fatally on the thirteenth day.

Signs.

In the absence of systematic clinical investigations, the incidence of signs and symptoms can be discussed in a general manner only. Comment here will be limited to the cardinal features of the salmonella fever syndrome.

Incubation Period.—Consideration of the Soputa group of cases suggests that the incubation period is about a fortnight.

Fever.—Fever and toxæmia were the main features of all cases. In uncomplicated salmonella fever the average duration of fever was fifteen days. When complications occurred, these either greatly prolonged the fever or caused a recrudescence after an apyrexial period of about a week. The average duration of continuous fever in cases in which complications were present was thirty-two days. The duration of continuous fever in 22 cases of salmonella fever and in 21 complicated cases is shown in Figure II. The longest total period of fever occurred in Case XLIX, in which the initial bout of fever lasted for four weeks and was followed by an afebrile period of a fortnight. Then the temperature rose again, and with the onset of pericarditis during the ninth week it remained elevated for a further eight weeks.

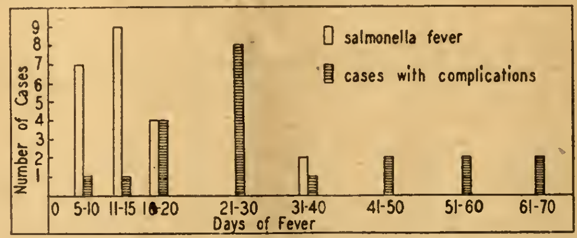


FIGURE II.

Duration of continuous fever in cases of salmonella fever and in cases in which complications occurred.

Rigors did not occur in the absence of malaria. The rise and fall of temperature was gradual, and at the fastigium it usually ranged between 102° and 104° F. In uncomplicated cases the pulse rate was relatively slow. Figure III shows the temperature chart in a case of uncomplicated salmonella fever. Figure I is the temperature chart in Case XXXVIII, which terminated fatally at the end of the second week.

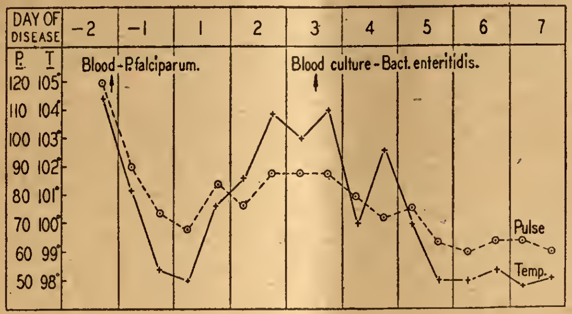


Figure III.

Temperature chart in Case X. The febrile period was much shorter than in most cases, but the change in the pulse : temperature ratio with the onset of salmonella fever is well shown.

Rash.—A rash probably due to salmonella infection was observed in six cases.

The patient in Case XVII was an orderly in a medical unit. He had an erythematous rash on the first day of the illness. This became macular on the second day and purpuric on the elbows and in the groin on the fourth day. A culture was grown from the blood on the eleventh day. The rash faded slowly, but on the fifteenth day rose spots were noticed on the abdomen.

In three cases the rash consisted of rose spots similar to those seen in typhoid fever. These appeared at the end of the first week of the disease in Cases XXIV and XXXIV, and at the beginning of the third week in Case V. In Case XXIV, which terminated fatally, the rash became more extensive, and on the abdomen and legs the macules became confluent. In Case XIX the rash seen on the fifth day was thought to be due to dengue fever, but the disease proved to be salmonella fever, and in Case XXXI a faint rash was seen on the abdomen on the twelfth day.

Spleen.—The presence or absence of splenic enlargement was noted in 37 cases; 20 of these patients had concurrent malaria. The spleen was palpable in 15 of these, and tenderness under the left costal margin was noted in another two. Of 17 cases not complicated by malaria, the spleen was palpable in seven, and tenderness under the left costal margin without palpable enlargement of the spleen occurred in one case.

Lymphatic Glands.—Significant enlargement of the lymphatic glands did not occur.

Abdominal Distension and Diarrhœa.—Abdominal distension occurred in most cases during the second week of the disease. The abdomen felt "doughy", and generalized tenderness was evident. Diarrhœa usually accompanied the abdominal distension, and lasted for about a week. The stools consisted of fluid fæces with a little mucus, and varied in number from four to twelve daily. Tenesmus did not occur.

Complications.

In twenty-seven cases a variety of complications developed, due to localization of *Bacterium enteritidis*. Several complications often occurred in one case, as may be seen by examining the individual case histories in Table I.

Cystitis.—Cystitis was the commonest complication, occurring in eighteen cases. In four cases hæmaturia was the first sign of infection of the bladder. Cystitis was first noted during the second week in nine cases, in the third week in seven, and in the fourth week in two. The usual clinical findings were suprapubic tenderness, frequency of micturition and scalding. The urine contained albumin, many pus cells and many red blood cells, and *Bacterium enteritidis* could always be isolated from it. The cystitis usually subsided in about three weeks.

In Case XXXIV cystitis persisted for ten weeks. After a course of sulphadiazine therapy the urine became sterile and normal on microscopic examination; but the condition subsequently relapsed and failed to respond to further sulphonamide therapy. Five months after the onset of the disease cystoscopy was performed and revealed cystitis. Cultures from urine taken from the bladder and the left kidney yielded *Bacterium enteritidis*. No abnormality was detected in a retrograde pyelogram.

Epididymo-Orchitis.—Epididymo-orchitis occurred in six cases. In one case it was bilateral, and in the others one side only was involved. Usually it followed shortly after the onset of cystitis, but in the case in which bilateral infection was present, the left testis was inflamed before cystitis was evident. Inflammation of the testis and epididymis usually subsided within three weeks.

Periostitis.—Periostitis occurred in four cases, commencing in the second week of illness and lasting for three or four weeks. In one case a painful swelling arose from the left ulna just below the olecranon. In two cases pain and tenderness were present over the end of the left acromion, with limitation of abduction and wasting of the deltoid muscle. In the fourth case fullness and tenderness were present over the region of the right sacroiliac joint. In no case could bony change be detected in X-ray photographs of the affected regions.

Perichondritis.—In one of the cases in which periostitis of the left acromion was present, a painful, tender swelling developed over the left fifth and sixth costo-chondral junctions during the sixth week of fever. This persisted for eight days and then subsided.

Bronchopneumonia.—Bronchopneumonia occurred in six cases. In the two fatal cases (Cases XXIV and XXXVIII) signs of consolidation developed in both lungs on the sixth and twelfth days respectively. No attempt at culture from the sputum was made in the first case, and in the second no hæmolytic streptococci or pneumococci were grown on a blood-agar plate, but *Bacterium enteritidis* was not especially sought. In Cases XXXI and XXXII bronchopneumonia developed in the second week, and in the latter *Bacterium enteritidis* was grown on culture from the sputum. Bronchopneumonia was followed by the development of a sterile pleural effusion in Case XXX. It is possible that in all these cases the bronchopneumonia was due primarily to *Bacterium enteriditis.*

Empyema.—Two cases of empyema occurred.

In Case XXVI the patient received a penetrating gunshot wound in the left subscapular region. Hæmopneumothorax was diagnosed ten days later, and on the twenty-eighth day thin turbid fluid, from which a pure culture of *Bacterium enteritidis* was grown, was aspirated from the left pleural cavity. Repeated aspiration and later closed drainage resulted in a cure after several months' treatment. No other signs of *Bacterium enteritidis* infection were recorded in this case except continued pyrexia from the fourth day after the injury.

The surgeons were unable to find adequate cause for this fever, and it may have been due to *Bacterium enteritidis* septicæmia.

In Case XXXII, following bronchopneumonia due to *Bacterium enteritidis,* empyema of the left pleural cavity developed in the third week. *Bacterium enteritidis* was grown in pure culture from the aspirated pus. Treatment by continued aspiration was successful.

Pleural Effusion.—In Case XXX a sterile pleural effusion developed during the fourth week of illness; it absorbed after four weeks.

In Case XLIX (see below, "Pericarditis"), a sterile left-sided pleural effusion developed during the twelfth week of the patient's illness. This resolved slowly, and two weeks later a right-sided pleural effusion developed. Fluid was still present in the right pleural cavity during the sixteenth week of the disease. On all occasions the fluid aspirated from the pleural cavities was clear, straw-coloured, and sterile.

Pericarditis.—Case XLIX has been reported elsewhere by Cobley and Wilson.(5)

After an initial bout of jaundice and fever, lasting for four weeks, the patient became afebrile. Epigastric discomfort and diarrhœa then developed, but no pathogens could be recovered from the stool. During the seventh week of the illness the temperature rose for a few days, and pain in the right side of the chest and cough were present. After another afebrile interval of one week the temperature rose again, and *Bacterium enteritidis* var. *blegdam* was isolated from the blood. The third bout of fever lasted for eight weeks. During the fourteenth week of the illness the pericardial sac was aspirated and 15 millilitres of turbid yellow fluid were withdrawn, from which *Bacterium enteritidis* var. *blegdam* was isolated. Next day pericardotomy was performed, and 40 ounces of thin pus were aspirated from the pericardial sac. Closed drainage was instituted, the sac being irrigated daily with two litres of saline solution, containing 100,000 units of penicillin per litre. A week later culture from washings from the pericardial sac failed to yield *Bacterium enteritidis* var. *blegdam*, although *Pseudomonas pyocynanea* and *Bacterium coli* were both isolated. Convalescence was slow, but the temperature fell to normal five weeks after the operation. Before evacuation to the mainland the patient was able to walk without dyspnœa or the development of œdema.

Cholecystitis.—Cholecystitis occurred in two cases.

In Case XXXIX the patient suffered his first attack of cholecystitis in the third week of the attack of salmonella fever. It gradually subsided, but five months later he had another acute attack which also settled down. During the whole of this period *Bacterium enteritidis* var. *blegdam* continued to be found in the fæces. Eight months after the original attack fluid was aspirated from the duodenum, and culture from this fluid contained a pure growth of *Bacterium enteritidis* var. *blegdam*. Despite further mild attacks of cholecystitis, the patient refused operation and was discharged from the army as a carrier of *Bacterium enteritidis* var. *blegdam*.

In Case XLII the patient was admitted to a medical unit in New Guinea in January, 1944, with a history of fever, malaise and vomiting of eight days' duration. Examination of a blood film revealed numerous trophozoites of *Plasmodium falciparum*. In spite of intensive antimalarial therapy, including three intravenous injections of quinine dihydrochloride, the temperature remained elevated and vomiting was troublesome for the next four days. Late on the night of the fourteenth day of the illness the patient suffered an attack of severe epigastric pain, and laparotomy was performed. The gall-bladder was found to be distended and tense, with œdematous walls. Eight millilitres of purulent fluid were aspirated. There were no stones in the gall-bladder. Cholecystostomy was performed and the gall-bladder was drained through a stab wound, the main incision being closed. No facilities for cultural examination of the purulent fluid were available, but a smear stained by Gram's method was found to contain numerous pus cells, small collections of bile pigment and occasional clumps of Gram-negative bacilli. The wound healed and the patient was evacuated to Australia. Six weeks after operation a cholecystogram revealed a non-functioning, diseased gall-bladder. However, as the wound was now healed, the patient was returned to duty.

After being discharged from hospital he suffered from vague gastro-intestinal symptoms and intermittent diarrhœa. He was readmitted to hospital in August, 1944, and *Bacterium enteritidis* var. *blegdam* was isolated from the fæces. Frequent culture from fæces during the next four months invariably yielded *Bacterium enteritidis* var. *blegdam*. The symptoms had not been relieved by rest or dietetic measures, and in December, 1944, eleven months after the original operations, cholecystectomy was performed. The gall-bladder contained no stones and the wall was thin and apparently normal. A culture from bile from the gall-bladder contained a pure growth of *Bacterium enteritidis* var. *blegdam*. The wound became infected, but cultural examinations of the stools now failed to yield any pathogens. The wound soon healed and the patient was discharged from hospital, free from salmonella infection, just over a year after his original admission to hospital.

Arteritis.—Brachial arteritis occurred in Case XXXIII. This patient was feverish for six days. Blood culture was not attempted at this stage. He still appeared ill after the fever had subsided, and on the ninth day there suddenly developed death-like pallor in the right hand with absence of the radial pulse and a tender swelling in the antecubital fossa. The circulation in the forearm improved in two hours, but a tender swelling remained in the area of the brachial artery for seven days.

Abscess.—One patient (Case XXXVII) bruised his right buttock while delirious, and at the end of the second week a large, deep-seated abscess developed at this site. Pus from the abscess yielded a pure growth of *Bacterium enteritidis*. This case calls to mind one mentioned by Lawes and Keon-Cohen,(6) in which pus from a large abscess in the upper part of the thigh of a Papuan native (N V) yielded "*Bacillus Gärtner*". This organism was later identified as *Bacterium enteritidis* var. *blegdam*.

A pure culture of *Bacterium enteritidis* var. *blegdam* was obtained from material aspirated from a breast abscess in a native woman (N VI) in Bougainville Island. This patient had been admitted to hospital suffering from diarrhœa, and was apyrexial. An abscess of the breast developed, and she died suddenly a few days later. No post-mortem examination was possible.

Coexistent Diseases.

Malaria.—All patients had been exposed to the risk of malaria infection, many of them in the early days of the Papuan campaign, when preventive measures were not efficiently organized. A large number of the patients were admitted to hospital with symptoms and signs of malaria, and parasites were found in the peripheral blood shortly after their admission to hospital. It was only when the patient failed to respond to antimalarial therapy, or when the toxæmia was greater than would be expected in *Plasmodium vivax* malaria, that enteric fever was suspected and appropriate examinations were carried out. Thick blood films were repeatedly examined in all cases, and parasites were found in 35. In 29 cases (17 *Plasmodium vivax*, 12 *Plasmodium falciparum*) they were found shortly after admission of the patient to hospital; in the other six (four *Plasmodium vivax*, two *Plasmodium falciparum*) they appeared during the course of the disease or early in convalescence. This high proportion of patients admitted to hospital suffering from malaria and being at the same time in the early stages of salmonella fever, suggests the possibility that an attack of malaria may considerably lower resistance to *Bacterium enteritidis*. The figures given in Williams, Sinclair and Jackson's(7) review of scrub typhus in New Guinea provide an interesting comparison, for both series of cases came from approximately the same population groups. In 626 cases of scrub typhus 82 patients had an attack of malaria whilst in hospital, most of these attacks occurring during convalescence.

Infective Hepatitis.—Many of the early patients were slightly icteric on their admission to hospital; but this was probably due to the repeated attacks of malaria from which many of them had suffered. In three cases, however, the patient was admitted to hospital with what was considered to be infective hepatitis, and subsequently developed salmonella fever.

In Case XLI the patient was admitted to hospital with jaundice. *Plasmodium falciparum* was found in a blood film examined shortly after his admission. Nine days after the onset of the jaundice and vomiting the temperature rose again, and a characteristic attack of salmonella fever followed.

The patient in Case XLVI was admitted to hospital with a history of fever, anorexia, headache and vomiting, and of having passed dark urine. Examination of the urine showed that bile salts and bilirubin were present in large amounts. The condition passed straight on to salmonella fever.

In Case XLIX the patient was admitted to hospital with fever and jaundice. The fever persisted for four weeks and then after a fortnight's interval recurred, and a culture was grown from the blood. This patient later developed pericarditis.

Laboratory Investigations.

Leucocytes.

The results of leucocyte counts are summarized in Table II.

In uncomplicated cases of salmonella fever, and in cases of the septicæmic type in the early stages of the illness, before complications due to localization of infection had occurred, the leucocyte count was reduced. In only six cases of the 25 investigated was the number of leucocytes greater than 8,000 per cubic millimetre.

When infection became localized, the leucocyte response varied, but usually the figure rose to about 10,000 per cubic millimetre.

Cultural Examination of the Blood.

Culture from the blood was attempted in 38 cases and the results are shown in Table III.

HYPERTENSION

A combination of phenobarbitone with theobromine has become the standard treatment for the relief of symptoms associated with hypertension.

*'Theogardenal' brand theobromine and phenobarbitone tablets are backed by a long experience in their manufacture, 'Theogardenal' brand being one of the first British preparations of this type to be made available. Over a period of more than ten years it has proved its worth and supported the claims we make for it.

SUPPLIES

containers of 25 tablets
containers of 100 tablets
containers of 500 tablets

Manufactured by
MAY & BAKER LTD.

* TRADE MARK

Distributors

MAY & BAKER (AUSTRALIA) PTY. LTD. - - - - - - - - SYDNEY, N.S.W.

TIME TO HAVE THOSE
Brakes checked Doctor
K.C.

You're busy, Doctor, but here's another appointment you MUST make. It won't take long for the specialists at Better Brakes to examine your braking system, diagnose any trouble . . . and correct it. To-day's braking systems are intricate; there may be more wrong than you suspect . . . and they require a specialist's knowledge.

Be sure of your brakes to-day—to-morrow may be too late. Get in touch with Better Brakes NOW.

BETTER BRAKES PTY. LTD.

SCIENTIFIC BRAKING SERVICE AND SUPPLIES FOR AUTOMOBILES, INDUSTRY AND AIRCRAFT

No. 1 Service Station— 107 Crown Street, Sydney.

No. 2 Service Station— 180 Broadway, opp. Grace Bros.

No. 3 Service Station— 189 Kent St., City side of Harbour Bridge.

No. 4 Service Station— 15 Darby St., Newcastle.

TABLE II.
Leucocytes per Cubic Millimetre.

Week of Disease.	Salmonella Fever and Septicæmic Type before Complications.			Septicæmic Type after Complications.		
	Cases.	Average.	Range.	Cases.	Average.	Range.
First	8	5,400	2,700 to 9,500			
Second	12	6,500	1,300 to 16,000	3	10,800	10,700 to 10,900
Third	5	5,600	4,300 to 8,400	3	12,200	7,500 to 16,500
Fourth				4	9,500	5,000 to 17,800

Consideration of the 13 cases in which attempted culture from the blood was unsuccessful suggests that earlier attempts would have been successful. Culture was not attempted in 12 cases; but a review of these cases indicates that, had the attempt been made in the first or early in the second week in all but one of these cases (Case I), it would have been successful.

In five cases a further cultural examination of the blood was made in the third or subsequent weeks after positive results had been obtained earlier. In one case only was the organism isolated again—namely, Case XXXIV—in which culture was successful on the seventh and twentieth days. An attempt at culture from the blood was made on the first day of illness in Case XX and was unsuccessful, but a positive result was obtained on the sixth day.

TABLE III.
Results of Cultural Examination of Blood.

Week of Disease.	Number of Cultures Attempted.	Number Successful.	Number Unsuccessful.
First	9	9	0
Second	19	15	4
Third and subsequent ..	10	1	9

In Case XLIX culture was first attempted on the fifty-eighth day and was successful, although a negative result was obtained seventeen days later. The definition of the first day of the attack of salmonella fever was difficult in this case, owing to a preexistent or coexistent attack of jaundice.

Agglutination Reactions.

Weil-Felix Reactions: Proteus OXK.—Agglutination tests against Proteus OXK were carried out in 27 cases. In one case only was the titre more than 1/25, and that patient had suffered from scrub typhus three months earlier. The titre in this case was 1/120.

Bacterium enteritidis var. *blegdam.*—The agglutinin response with *Bacterium enteritidis* var. *blegdam* was not satisfactorily investigated. A formol-saline suspension of the organism isolated from the blood in Case XXX was used in the tests performed. The amount of "H" agglutination present was read macroscopically after four hours in a water bath at 56° C. Tests were carried out in 22 cases, serum being collected after the end of the third week of the disease. The results are set out in Table IV. In the majority of cases only one test was performed, but in Case XLIII tests on the seventh and thirty-eighth days revealed a rise in titre from 1/40 to 1/160, and in Case XL tests on the twenty-sixth and thirty-seventh days revealed a rise from 1/320 to 1/1,280. Little can be deduced except that agglutination tests with an emulsion of *Bacterium enteritidis* var. *blegdam* may prove useful in diagnosis in cases in which cultural examination of blood, fæces and urine has not been attempted or has given negative results.

TABLE IV.
Agglutination with Bacterium enteritidis *var.* blegdam "H".

	Maximum Titre.						
	1/25	1/160	1/250	1/500	1/1000	1/1250	1/2500
Number of cases ..	3	1	5	6	4	2	1

Fæces.

Examination.—Observations on the macroscopic and microscopic character of the stool were recorded in 36 cases. Abnormal stools were observed in 29 of these cases during the following periods:

First week only (usually sixth or seventh day)	7
Second week only	12
Third week only	2
Fourth week only	1
Fifth week only	2
Second and third weeks	1
Second to sixth weeks	2
Fourth and fifth weeks	2

The stool usually consisted of fluid fæces containing little mucus, and microscopic examination revealed a few pus and epithelial cells amidst the fæcal debris. Occasionally, however, blood and mucus were present and the exudate was highly cellular.

Cultural Investigation.—If any mucus was present in the fæces, it was washed in sterile saline solution and plated directly on MacConkey's agar, desoxycholate-citrate agar, or "Difco" Wilson and Blair's medium. If no mucus could be found, a small amount of fæces was plated directly or after enrichment for eighteen hours in tetrathionate medium. Enrichment was used in only a few cases of this series. On Wilson and Blair's medium *Bacterium enteritidis* var. *blegdam* gave black colonies not unlike those of *Bacterium typhosum*, but without the characteristic surrounding metallic sheen produced by the latter organism.

Culture from the fæces was attempted in 48 cases. The results are shown in Table V in terms of the stage of the illness.

TABLE V.
Results of Cultural Examination of Fæces.

Culture.	Total.	Week of Disease.													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Cases[1]*:*															
Culture obtained	33	5	17	3	3	2	2	1	—	—	—	—	—	—	—
Culture not obtained	15	1	6	2	1	2	2	1	—	—	—	—	—	—	—
Specimens[2]*:*															
Culture obtained	56	6	16	5	6	6	6	4	1	2	0	2	0	0	2
Culture not obtained	87	5	8	7	12	11	11	9	6	6	2	3	4	1	2

[1] The first positive culture obtained, or the first culture attempted when all specimens gave negative results, is recorded.
[2] When more than one specimen was examined during any week, all but one result for that week has been excluded from the table.

In Case XLVI a culture was obtained from the stool, although diarrhœa had never occurred. In several cases culture of *Bacterium enteritidis* in the early weeks of the disease was associated with diarrhœa and the organism continued to be excreted in the fæces for a considerable period after diarrhœa had ceased. In four cases one negative finding intervened between successive positive results, and in one case two negative findings intervened between successive positive results.

Figure IV shows the periods over which cultures were obtained from the stools in nine cases in which several examinations were made. *Bacterium enteritidis* var. *blegdam* was excreted in the fæces of two patients (Cases XXXIX and XLII) for prolonged periods. Both these men suffered from cholecystitis. Fæcal cultures were obtained in Case XXXIX from the twenty-ninth to the two-hundred-and-eighth day of the disease, at which stage the patient was discharged from the army, having refused cholecystectomy. One patient (Case XLII) suffered from acute cholecystitis in January, 1944, but fæcal culture was not attempted till eight months later. Cultures were then regularly obtained until cholecystectomy was performed four months later.

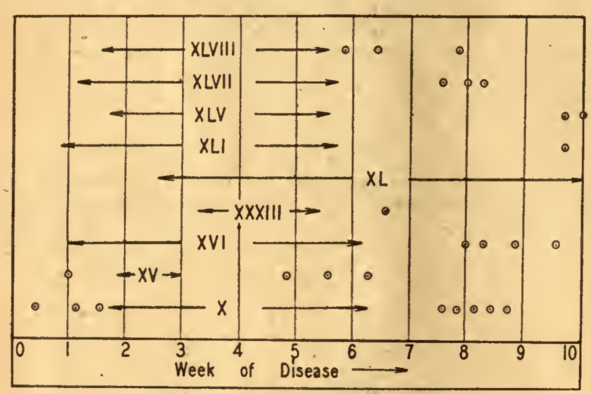


FIGURE IV.

Diagram illustrating the period for which the organism could be grown on culture from the fæces. The number on each line represents the case number (see Table I). When negative results were obtained before or after the positive results, the days of negative results are shown by a point within a circle.

Urine.

Chemical and Microscopic Examination.—Albuminuria, often associated with the presence of hyaline and granular casts, was observed in several cases of uncomplicated salmonella fever at the height of the illness. It disappeared as the elevated temperature subsided. The commonest complication in this series of cases was cystitis. When it occurred, the urine contained many pus cells and usually many red cells, and culture from such urine always produced a positive result. Hæmaturia was the first sign of cystitis in four cases, but it never lasted for more than two days.

Cultural Examination.—The centrifuged deposit was plated on blood agar. Cultural examination of the urine was made in 44 cases, and cultures were obtained at some time in 18. When a cellular deposit was present in the urine, *Bacterium enteritidis* could always be obtained. In only one case (Case V) was a culture grown from the urine in the absence of an abnormal cellular deposit, and in that case cultural examinations a week and a fortnight later respectively both gave negative results. The results are shown in Table VI in terms of the stage of the illness at which the first culture was obtained, or the first cultural examination attempted if all specimens gave negative results.

The periods during which *Bacterium enteritidis* was excreted in the urine are shown in Figure V. Prolonged excretion of the organism was a feature of Case XXXIV, in which the urine yielded cultures for ten weeks; the condition then apparently cleared up, but relapsed, and the urine still contained the organism five months later.

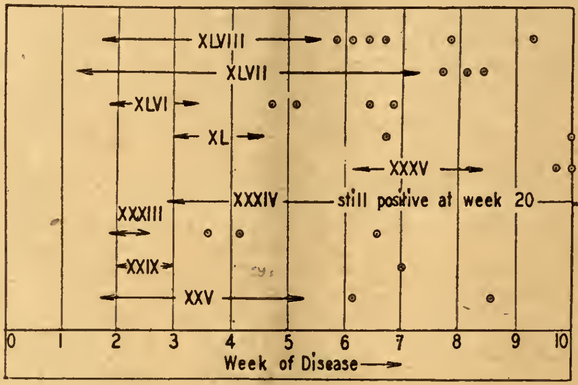


FIGURE V.

Diagram illustrating the period for which the organism could be grown on culture from the urine. The number on each line represents the case number (see Table I). When negative results were obtained before or after positive results, the days of negative results are shown by a point within a circle.

Other Pathological Materials.

Sputum.—*Bacterium enteritidis* was isolated from the sputum of one patient (Case XXXII), who was suffering from bronchopneumonia. Cultural examination of the sputum of the other five patients with bronchopneumonia was either not attempted or gave negative results.

Pleural Fluid.—Clear, sterile, pleural fluid was obtained from the pleural cavities in Cases XXX and XLIX. Pus from empyemata yielded a pure culture of *Bacterium enteritidis* in Cases XXVI and XXXII.

Pericardial Fluid.—Purulent fluid was withdrawn from the pericardial sac in Case XLIX, and yielded a pure culture of *Bacterium enteritidis.*

Duodenal Contents.—Duodenal contents were aspirated in three cases, in which excretion of the organism in the fæces had been prolonged. In Cases XXXIX and XLII culture from the duodenal fluid produced a positive result.

Abscess Fluid.—In Case XXXVII pus from a deep-seated abscess on the buttock yielded a pure culture of *Bacterium*

TABLE VI.

Results of Cultural Examination of Urine.

Culture.	Total.	Week of Disease.												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Cases[1]:														
Culture obtained	18	0	9	4	1	2	1	1	—	—	—	—	—	—
Culture not obtained	26	5	11	1	6	0	1	2	—	—	—	—	—	—
Specimens[2]:														
Culture obtained	35	0	9	7	5	5	4	1	1	2	1	0	0	0
Culture not obtained	105	5	20	5	12	13	10	12	8	7	5	5	2	1

[1] The first positive culture obtained, or the first culture attempted when all specimens were negative, is recorded.
[2] When more than one specimen was examined during any week, all but one result for that week has been excluded from the table.

enteritidis. In two New Guinea natives the organism was obtained from an abscess of the buttock (N V) and a breast (N VI) respectively.

Diagnosis and Differential Diagnosis.

Early and repeated cultural examination of the blood in all cases of unexplained fever, and the isolation of the causative organisms from the fæces, the urine or collections of pus later in the disease, constitute the most important investigations necessary for the diagnosis of infections with *Bacterium enteritidis* var. *blegdam*.

The results of agglutination reactions with formolized emulsions of *Bacterium enteritidis* var. *blegdam* suggest that such reactions may be useful in cases in which the organism has not been isolated. However, further study of the agglutinin response is necessary before the value of such tests is assured.

Infections with *Bacterium enteritidis* var. *blegdam* must be differentiated from the other fevers commonly encountered in the tropics. No attempt will be made to discuss all the problems in differential diagnosis. In this series of cases the commonest error in the early stages of the illness was to ascribe all the symptoms found to malaria. Many patients were admitted to hospital owing to an attack of malaria, but the symptoms and fever failed to respond to adequate antimalarial therapy, and *Bacterium enteritidis* var. *blegdam* was then isolated from the blood, fæces or urine.

During the early months of military operations in New Guinea, before the symptomatology of scrub typhus was well known and before enteric fever due to *Bacterium enteritidis* var. *blegdam* had been recognized, these two diseases were commonly confused. Clinically the most important points in differentiation are the presence of an eschar and of lymph gland enlargement in scrub typhus and their absence in enteric fever. The positive Weil-Felix reaction in scrub typhus or the isolation of the causative organism in salmonella fever confirms the clinical differentiation of these two diseases.

An epidemic of dengue fever occurred at Finschhafen early in 1944, and a number of severe infections were seen. It is possible that a few mild cases of salmonella fever may have been confused with dengue fever during this period, for when cultural examination of the blood was carried out more extensively, a few mild cases of salmonella fever (such as Case XXI) were recognized.

Staphylococcal septicæmia is not uncommon in tropical areas. Leucopenia and the relatively slow pulse rate were useful points in the differentiation of enteric fever from septicæmia caused by pyogenic organisms.

Most patients were admitted to medical wards. A few patients, principally natives, were first admitted to surgical wards suffering from abscesses in the breast or buttock. Surgeons must also be aware of the possibility of *Bacterium enteritidis* infection complicating battle casualties (as in Cases XII and XXVI of this series). Unexplained fever in a battle casualty, especially if accompanied by leucopenia, suggests coincident malaria, dengue, scrub typhus or enteric fever.

Prognosis.

There were four fatal cases of infection with *Bacterium enteritidis* var. *blegdam* in this series. Two of the patients who died were Australian soldiers (Cases XXIV and XXVIII), one was a Solomon Islands native and one was a Japanese prisoner of war.

Fifteen (including two fatal cases) of the 27 cases in which septic complications were observed occurred amongst troops who had been engaged in the exhausting fighting at Soputa, Buna and Gona. Only five of the 22 cases of uncomplicated salmonella fever were found in this group. It is likely that at this time a number of cases of uncomplicated salmonella fever were misdiagnosed as scrub typhus; but it is possible that the exhausted state and lowered resistance of the soldiers engaged in the Papuan compaign predisposed them to septic complications.

In the absence of complications, patients were fit to return to their unit in about six weeks, provided the organism was no longer excreted in fæces or urine. If complications occurred, the period of disability was much greater.

Prophylaxis.

The possible sources of infection have been discussed earlier (see section "Epidemiology"). They indicate that the methods of hygiene and sanitation usually employed to prevent enteric fever should suffice in most cases, but that in addition all food and eating utensils should be protected from contamination with the excreta of rodents.

All soldiers in the Australian Army are inoculated with "T.A.B." vaccine, the initial doses being 0·25, 0·5 and 0·5 millilitre, with a yearly "refresher" dose of 0·5 millilitre. Most of the patients in this series had received their last "refresher" dose within the year prior to contracting the disease.

Topley and Wilson(8) state that the flagellar antigens, and their corresponding antibodies, play little if any part in the mechanism of specific antibacterial immunity, and that the heat-stable somatic antigens and the antibodies that react with them are all-important. *Bacterium enteritidis* var. *blegdam* shares the somatic antigens IX and XII with *Bacterium typhosum*, so that it is difficult to understand why the standard Australian Army "T.A.B." inoculation has apparently failed to confer protection against the *Bacterium enteritidis* var. *blegdam*. The known endemicity of typhoid and paratyphoid fevers in New Guinea and the high morbidity of these diseases amongst Japanese troops compared with their rarity in Australian soldiers indicates that "T.A.B." inoculations have provided good protection against *Bacterium typhosum*, *Bacterium paratyphosum A* and *Bacterium paratyphosum B*.

Atkinson(1) has commenced a series of experiments on the protective effect of vaccination with "T.A.B." vaccine and with *Bacterium enteritidis* var. *blegdam* vaccine. Should *Bacterium enteritidis* var. *blegdam* vaccine prove to be protective, and should ordinary "T.A.B." vaccine prove ineffective, the former should be added to the present triple vaccine when inoculation of troops or civilians destined for the islands to the north of Australia is carried out.

Treatment.

The patient must be isolated as soon as the disease is suspected, and all discharges and excreta must be promptly sterilized. Isolation should be maintained until all abnormal discharges have ceased and until three cultural examinations of fæces and urine at intervals of one week have given negative results. An enrichment technique should be adopted when fæces are being examined for clearance tests.

If examination of thick blood films reveals malaria parasites, antimalarial therapy must be instituted immediately; if no parasites are seen in the films, suppressive "Atebrin" must be administered in doses of 0·1 gramme per day.

Bornstein and Strauss(9) examined the effect of sulphanilylguanidine on different salmonella types. They found that *in vitro* only *Bacterium typhosum*, *Bacterium paratyphosum A* and *Bacterium choleræ-suis* were sensitive. *In vivo*, sulphaguanidine cured mice infected with *Bacterium choleræ-suis*, but had no effect on infections with *Bacterium enteritidis* or *Bacterium typhi-murium*. Later, Beamer(10) described moderately good results with sulphaguanidine in the control of *Bacterium enteritidis* infection in mice.

Sulphonamide therapy was instituted at some time in the majority of the cases described in this paper. Sulphaguanidine was given to all patients suffering from diarrhœa, but it had no effect on the excretion of *Bacterium enteritidis* in the fæces. In Case XXXIV the urine, which had contained the organism for ten weeks, became sterile after a course of sulphadiazine; but this patient relapsed, and in spite of further courses of sulphadiazine *Bacterium enteritidis* was still present in the urine. Sulphamerazine, sulphadiazine and sulphapyridine were all used on different occasions during the initial febrile stage of the disease, but had no effect upon the course.

Cobley and Wilson(5) reported that *Bacterium enteritidis* var. *blegdam* was sensitive to penicillin in a concentration of 62·5 units per millilitre, and they considered that the daily irrigation of the pericardial sac with two litres of saline solution containing a total of 200,000 units of penicillin was of some importance in the favourable outcome of their case. Atkinson,(1) with better laboratory facilities, found that growth in nutrient broth was inhibited by a concentration of about 30 units of penicillin per millilitre. It is obvious, however, that penicillin could have no influence upon blood stream infection.

Treatment must therefore be symptomatic, complications being dealt with as they arise. Careful nursing is the most important measure.

Discussion.

Until a few years ago *Bacterium typhosum* and more rarely *Bacterium paratyphosum A*, *Bacterium paratyphosum B* and *Bacterium paratyphosum C*, were the only organisms thought to cause enteric fever in man. Recently several other organisms of the salmonella group have been incriminated as the causative organisms of enteric fever, and this report adds *Bacterium enteritidis* var. *blegdam* to the number.

It is not certain, from the evidence available, whether infections with this organism have long been endemic amongst the natives of New Guinea, New Britain and the Solomon Islands, or whether they were introduced by the Japanese and spread from them to the native population and to Australian troops. Whatever the origin of the disease, it is now endemic in these islands.

Clinically the disease differs from the common forms of enteric fever encountered in the Australasian region in the frequency with which septic complications occur. As in other enteric infections, it appears that the disease may vary in severity from a symptomless carrier state to a severe illness with multiple septic complications. Simple diarrhœa seems to be a rare manifestation of infection, having occurred only twice amongst the 56 cases here described.

Sporadic cases will probably occur amongst natives and garrison troops in the New Guinea region. Systematic clinical, laboratory and epidemiological study of such cases should clarify many of the points that have as yet been inadequately investigated.

Summary.

1. Fifty cases of *Bacterium enteritidis* infection in Australian soldiers are described. The organism was further identified as *Bacterium enteritidis* var. *blegdam* in 17 cases. The remainder conformed to the clinical and epidemiological picture of the confirmed cases, and during convalescence the majority of specimens of serum examined gave specific agglutination reactions with a formolized emulsion of *Bacterium enteritidis* var. *blegdam*.

2. The disease is probably endemic throughout New Guinea, New Britain and the Solomon Islands, and cases have occurred among natives and Japanese in these areas.

3. Clinically, cases fall into two main groups: firstly, enteric fever (salmonella fever) of a fortnight's duration, and secondly, an illness which commences in the same way but in which complications develop owing to localization of infection from the second week onwards.

4. Complications include cystitis, epididymo-orchitis, periostitis, perichondritis, cholecystitis, bronchopneumonia, empyema, pericarditis and arteritis.

5. Malaria occurred coincidentally in a high percentage of cases among Australian soldiers.

6. *Bacterium enteritidis* var. *blegdam* can be isolated from the blood in the first and second weeks of the disease, and from the fæces and urine in a large number of cases from the second week onwards. In cases in which infection is localized, it can be isolated from the appropriate abnormal fluids.

7. A slight neutrophile leucopenia is present in the first and second weeks of the disease.

8. No specific treatment is known.

Acknowledgements.

Lieutenant-Colonel C. Backhouse, Major J. Perry, Major J. R. McGovern, Captain A. K. Sewell, Captain E. French and Sergeant R. W. Irvine have kindly provided details of case histories not available from other sources. Captain S. Tee carried out many of the laboratory investigations. Colonel E. V. Keogh's advice and criticism have been a constant help in the preparation of this paper. The Director-General of Medical Services, Major-General S. R. Burston, has given us permission to publish this article.

References.

(1) N. Atkinson: "Preliminary Report on Strains of Salmonella Blegdam causing Infections in Humans in New Guinea", THE MEDICAL JOURNAL OF AUSTRALIA, March 9, 1946, page 326.

(2) E. French: Personal Communication, August, 1945.

(3) C. Backhouse: Personal communication, August, 1945.

(4) J. Sachs and W. Antine: "Salmonella Infection in Man; Report of 5 Cases with Autopsies in 2 Cases, and Review of Clinical Aspects", *The American Journal of the Medical Sciences*, Volume CCVIII, November, 1944, page 633.

(5) J. F. C. C. Cobley and T. E. Wilson: "Report of a Case of Salmonella Blegdam Septicæmia and Suppurative Pericarditis with Recovery." (To be published.)

(6) C. H. W. Lawes and B. T. Keon-Cohen: "Papuan Interlude", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, September 30, 1944, page 356.

(7) S. W. Williams, A. J. M. Sinclair, and A. V. Jackson: "Mite-Borne (Scrub) Typhus in Papua and the Mandated Territory of New Guinea: Report of 626 Cases", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, November 18, 1944, page 525.

(8) W. W. C. Topley and G. S. Wilson: "The Principles of Bacteriology and Immunity", Second Edition, 1936, page 830.

(9) S. Bornstein and L. Strauss: "Selective Action of Sulphanilylguanidine on Different Salmonella Types and its Practical Importance", *Proceedings of the Royal Society of Experimental Biology and Medicine*, Volume XLVII, 1941, page 112.

(10) P. R. Beamer: "Sulphaguanidine in Control of Salmonella Infection and Carrier State in Mice", *Proceedings of the Royal Society of Experimental Biology and Medicine*, Volume XLIX, 1942, page 419.

PRELIMINARY REPORT ON STRAINS OF SALMONELLA BLEGDAM CAUSING INFECTIONS IN HUMANS IN NEW GUINEA.

By NANCY ATKINSON,
From the Institute of Medical and Veterinary Science, Adelaide, South Australia.

PRIOR to the recording by Atkinson, Woodroofe and Macbeth(1) of the occurrence of *Salmonella blegdam* in four cases of enteric-like fever in soldiers in New Guinea, only one culture of this organism had ever been found and described. Kauffmann(2) investigated this culture along with a number of other Gärtner strains and described it as a new serological type to which he gave the name *Salmonella enteritidis* var. *blegdam*. The culture, labelled number 22, came to him from the Blegdam Hospital, Copenhagen, where it had been isolated in 1929 from the blood of a patient suffering from pneumonia. No history of this patient was given, nor any evidence that the organism was causally associated with the disease. The present report gives definite evidence of the pathogenicity of the organism for man.

The Salmonella Subcommittee(3) revised the Kauffmann-White antigenic table for the salmonellas. Varieties were no longer included in the table, and *Salmonella enteritidis* var. *blegdam* became *Salmonella blegdam*.

My collection of strains of *Salmonella blegdam* consisted of 31 cultures, of which 25 were isolated from human patients, five from laboratory mice and one from a guinea-pig. Table I gives the list of patients from whom *Salmonella blegdam* was isolated, and the specimens shown to contain the organism.

Details of some of the cases recorded in Table I appear in a report by Fenner and Jackson.(4)

DIENŒSTROL B.D.H.

The Non-toxic Synthetic Œstrogen

Synthetic œstrogen therapy has been found to be a most useful method of treating ovarian deficiency in the female, the particular advantage being that of oral administration. It has proved of great value in the control of climacteric and menopausal disorders and of certain functional nervous disorders; it is of value also in delayed puberty and amenorrhœa, sterility and dysmenorrhœa associated with uterine hypoplasia and in vulvo-vaginal disorders such as pruritus and kraurosis vulvæ and senile vaginitis.

Until recently stilbœstrol has been most commonly employed. In a significant proportion of cases, however, toxic symptoms ensue which occasionally become so unpleasant as to render further treatment impracticable. In view of this, Dienœstrol B.D.H. is now to be regarded as the synthetic œstrogen of choice, since it is well tolerated, and, owing to its freedom from toxicity, it is possible to administer higher dosages of Dienœstrol B.D.H. than of stilbœstrol. This suggests that dienœstrol will prove to be more satisfactory not only in the treatment of those disorders in the female for which stilbœstrol has hitherto been used, but also in conditions in the male in which intensive œstrogen therapy has proved encouraging, notably prostatic carcinoma.

Stocks of Dienœstrol B.D.H. are held by leading pharmacists throughout the Commonwealth, and full particulars are obtainable from

THE BRITISH DRUG HOUSES (Australia, Pty.) LTD.
250 Pitt Street Sydney

Dien/Aus/463

Tranquillity
with
TROPINAL TABLETS

LITERATURE ON REQUEST TO

HAMILTON LABORATORIES LTD.

ADELAIDE, SOUTH AUSTRALIA

★ Each tablet contains Phenobarbital gr. 1/3; Caffein gr. 1/3; Atropine Sulphate gr. 1/300. For the treatment of Neurosis, Hyper-irritability, Migraine, Vomiting of Pregnancy, Climacteric Disturbances, Epilepsy, Sea and Air Sickness.

POST GRADUATE STUDY

☞ **Are you preparing for any Medical or Surgical Examination?**

Send Coupon below for valuable publication

"GUIDE TO MEDICAL EXAMINATIONS"

PRINCIPAL CONTENTS

The Examinations for the Qualifying Examinations.
The M.D. Degrees of all British and Colonial Universities.
How to pass the F.R.C.S. Examination.
The F.R.C.P. & S. of Canada.
The M.R.C.P. London and Edinburgh.
Diploma in Anæsthetics.
The Diploma in Tropical Medicine.
Diploma in Ophthalmology.
Diploma in Psychological Medicine.
Diploma in Child Health.

You can prepare for any of these qualifications by postal study at home and come up to Great Britain for examination. We specialize in Post-graduate tuition.

THE SECRETARY,
MEDICAL CORRESPONDENCE COLLEGE,
19 Welbeck Street, London, W.1.

Sir: Please send me a copy of your "Guide to Medical Examinations" by return.

Name ....
Address ....
Examinations in which interested................
M.J. of A.

In allergic reactions

Phenodren D·H·A

Tablets of Phenobarbital (grs. ¼) and Ephedrine Sulphate (grs. ½) in complementary dosage.

FELTON GRIMWADE & DUERDINS PTY. LTD.

342 FLINDERS LANE, MELBOURNE, C.1

The cultures were by antigenic analysis identified as *Salmonella blegdam* IX, XII: *gmq*. Agglutination tests with O antiserum established the presence of the O antigen IX. The H antigens were detected by agglutination tests with unabsorbed and absorbed H antisera. Suspensions of all cultures produced agglutination with all antisera containing agglutinins for the H antigen *g*. Further tests with absorbed antiserum specific for the H antigens *f*, *m*, *p*, *q*, *u*, showed agglutination with *m* and *q* antiserum only.

Table I.
Infections with Salmonella blegdam.

Case Number.	Specimens Containing *Salmonella blegdam.*	Type of Illness.
VII[1]	Fæces.	Salmonella fever.
VIII	Blood.	Salmonella fever.
X	Blood and fæces.	Salmonella fever.
XII	Blood.	Salmonella fever.
XIII	Blood.	Salmonella fever.
XIX	Fæces.	Salmonella fever.
XXIII	Blood.	Salmonella fever.
XXV	Blood and fæces.	Salmonella fever with complications.
XXIX	Blood, fæces and urine.	Salmonella fever with complications.
XXX	Blood.	Salmonella fever with complications.
XXXVIII	Blood, fæces and urine.	Salmonella fever with complications (fatal).
XXXIX	Fæces and bile.	Salmonella fever with complications.
XLI	Fæces.	Salmonella fever with complications.
XLII	Fæces and bile.	Salmonella fever with complications.
XLIII	Urine and fæces.	Salmonella fever with complications.
XLV	Blood, fæces and urine.	Salmonella fever with complications.
XLIX	Blood and pericardial fluid.	Salmonella fever with complications.
McCaul[2] ..	Pus from empyema.	Salmonella fever with complications.
Gray[2] ..	Fæces. Heartblood and bile at post-mortem examination.	Ruptured liver, followed by salmonella fever (fatal).
N I	Rectal swab.	Healthy carrier.
N II	Fæces.	Recurrent diarrhœa with fever.
N III	Blood.	Salmonella fever.
N V	Pus from abscess of buttock.	Abscess of buttock.
N VI	Pus from breast abscess.	Diarrhœa, abscess of breast (fatal).
Jap 1	Blood.	Salmonella fever (fatal).

[1] Case numbers are the same as those given in Fenner and Jackson's(4) paper; "N" = New Guinea native; "Jap" = Japanese prisoner of war.

[2] These two cases are not described in Fenner and Jackson's(4) paper, but both patients were Australian soldiers infected in Bougainville Island.

The H antigens of the unidentified cultures were therefore *gmq*. To prove completely the identity of these cultures with *Salmonella blegdam*, mirror agglutinin absorption tests were performed. All agglutinins, both H and O, were removed from *Salmonella blegdam* antiserum by the unknown culture, and from antiserum to this culture all agglutinins were removed by *Salmonella blegdam*.

Several of the cultures were inoculated into mice. The animals died after about four days or longer, according to the dose, and the organism was recovered from the internal organs. Similar doses of dead culture produced no ill effects. Experiments are now proceeding on the protective effect of vaccination with "T.A.B." vaccine and with *Salmonella blegdam* vaccine. *Salmonella blegdam* was not very sensitive to penicillin *in vitro*; growth in nutrient broth was inhibited by a concentration of about 30 units per millilitre.

This collection of cases and cultures provides an interesting extension of our knowledge of salmonella infections. *Salmonella blegdam* is undoubtedly a human pathogen of considerable virulence and invasiveness.

A detailed study of these strains of *Salmonella blegdam* is being made, and a report of this work will appear elsewhere.

References.

(1) N. Atkinson, G. M. Woodroofe and M. Macbeth: "The Occurrence of Salmonella Types in Australia", *The Australian Journal of Experimental Biology and Medical Science*, Volume XXII, 1944, page 201.

(2) F. Kauffmann: *"Über die Typeneinteilung der Gärtner-Gruppe"*, *Zeitschrift für Hygiene und Infektionskrankheiten*, Volume CXVII, 1936, page 431.

(3) Salmonella Subcommittee: Report of the Third International Congress of Microbiology, 1940, page 832.

(4) Frank Fenner and A. V. Jackson: "Enteric Fever due to *Bacterium enteritidis* var. *blegdam* (*Salmonella blegdam*); a Series of Fifty Cases in Australian Soldiers from New Guinea", The Medical Journal of Australia.

◆

THE SOCIOLOGICAL ASPECTS OF COMMUNITY HOUSING.[1]

By Irene B. Sebire, M.B., B.S. (Melbourne),
D.P.M. (Sydney),
Sydney.

Publications devoted to housing schemes, slum clearance and community planning provide ample information regarding the material requirements and physical necessities of the population. But references to the influence of environmental conditions on mental health and social adjustment are relatively infrequent. One finds also little evidence of an appreciation of the pattern of family life and the psychological needs of the individual—of the importance of the spirit of neighbourhood and the social significance of community relationships.

The sociologist and the architect do not appear to have worked together to devise a plan combining both social and space relationships. Collaboration between these two specialists might reasonably result in a comprehensive scheme designed to serve both cultural and physical requirements. The sociologist, with his knowledge of the structure of the family, its social implications and the emotional needs of its members, has a particular contribution, surely, to make to housing policy. He is experienced in analysing the life of the family and in determining the capacity of individuals to adjust themselves to a material environment. He is aware of social changes, of variations in the pattern of the family, and of new values in the status of its members.

The problem of fitting numerous family situations into homes which serve the needs of various cultural and occupational groups is more the concern of the sociologist than of the architect. A plan which pays due consideration to the material and social needs of families calls for a mutually reciprocal effort on the part of both of them.

Dr. Reimer, assistant professor of sociology at Washington University, was responsible for the direction of a study of the adjustment of family life to apartment houses in Stockholm. This was undertaken in close association with architects, social workers, home economists and social statisticians. The investigation covered the diversified activities of the members of each family with a survey of their social functions. An inquiry was made into the rhythm of family life, the interrelationships of various members, their productive contribution to housekeeping and their participation in common recreation. This intensive and detailed information formed a basis for determining the general style of life, representative of the families for whom housing was to be designed. It showed the intimate connexion between dwelling places and the social activities of their occupants. Thus, any general plan of housing reform should be considered in relation to suggestions for social reconstruction.

The Family as a Unit for Social Reconstruction.

Programmes for adequate housing and the abolition of sub-standard areas, well conceived though they may be, will not eradicate the poverty of present-day social life unless they include also a positive plan for the building of a new society. In this rebuilding, it is generally believed that the unit of construction should continue to be the family, representing as it does an institution anthropologically accepted and biologically and socially determined, as the basic unit of society. Its emergence by an evolutionary process and its survival through successive generations indicate its effectiveness in ensuring the welfare of the individual and the stability of the community in the past.

---

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on August 30, 1945.

Continuity of the family group as an integral unit will be determined largely by the maintenance of those values of home life which can survive despite rapidly developing social changes. Home life, however, presupposes a home—an area for the functioning of parenthood and the rearing of a family under conditions most conducive to its general welfare. Here the foundations are laid which determine largely the personality qualities of each child, where parental attitudes and example influence its progress towards social maturity and physical and emotional well-being. Habits and patterns of behaviour become formulated and established during the early suggestible years of the young child in accordance with those obtaining in the home atmosphere.

It is reasonable to expect that schemes for improved housing will be directed towards providing those material comforts and advantages which make it possible for parents to make a maximum contribution to the general security of the family while maintaining a decent standard of living. But houses, in my opinion, will continue to be less important than the people who live in them, and the structure of the family group more significant than the structure in which its members make their home.

Changes in the Traditional Structure of the Family.

As a social institution, the structure of the family of the past has conformed to a fairly conservative pattern with its interrelationships, its standard of ethical behaviour, its sharing of social obligations and the passing on of conventionally accepted customs. Previously, the role of each member of the family was more or less culturally prescribed. But increasingly, social and economic forces have operated and continue to operate in altering the traditional pattern of the family unit, threatening to jeopardize its integrity. These trends, already evident in previous generations, have been accelerated under war-time conditions, which have revealed an already existing deterioration in the stability of the family.

There has been a cultural lag in social institutions which have failed to keep pace with individual requirements, nor has the environment been modified sufficiently rapidly to satisfy the emotional needs which vary with progressive development and become more insistent in a national crisis such as war. The traditional pattern of the family is changing at a rate for which we have as yet formulated no effective design.

The transition from domestic industry to the factory system, and specialization resulting from mass production methods, have affected the organization of the family, which now functions rarely as a productive economic unit. Already it is surrendering certain of its original and inclusive functions to other agencies of society. Gradually such agencies — protective, educational, religious and economic—have developed and become specialized in performing functions belonging exclusively to the family of the past. This delegation of responsibility affects adversely the prestige and status of the parents.

The family is no longer a self-sufficient unit. It has lost to some extent its previous assurance and social power. Family bonds have weakened, the interdependence of its members is less evident, and there is a decreasing opportunity for the sharing of common interests and for identification in similar endeavour. There is isolation of family members during both working and leisure hours, and less and less opportunity for the family to congregate together. With the lessening in importance of the family, there is a progressive waning of the home as a social centre. Unprecedented freedom for growing boys and girls, who demand prematurely the privileges while ignoring the responsibilities of adult status, takes them into the community in search of interests external to the home. Confusion has arisen also from bewildering conflicts in social usages, while changes in ethical standards result in a revolt against traditional morality.

With the development of flats, tenements and apartment houses, children are driven out from the narrowing confines of the home to play in small backyards, lanes and alleyways. They are learning to look to the community for entertainment and amusement, much of which is offering in the form of supervised play or commercialized recreation. Inside the home, particularly in the multiple dwelling house, the old-time roomy kitchen has been replaced in many instances by a kitchenette, while the popularity of dining nooks indicates a depleted or separated family. Restaurants and delicatessens are making of cookery and kitchencraft rapidly disappearing arts, especially with the rapid growth of women's employment and social interests outside the home. It would appear that our houses are more in the nature of dormitories—places in which the family assembles on rare occasions only. The sociologist may well ask whether the architect of the future will plan in keeping with this change in family relationships, the estrangement of the old and young generations, and the effect of expanding club and commuity life. But the shrinking of houses and the limitations of family life are not due solely to economic causes and the shortage of domestic help. They are in keeping with the trend of the family from the home into the community beyond.

The Cultural Pattern of the Community.

In our modern society no family can live entirely unto itself. It is becoming more dependent on community facilities and resources, participation in which may well endanger its integrity and entity. Since the family has been deprived of many of its earlier socio-economic functions, family members will be required to decide to what extent social services can be utilized as adjuncts to, and not substitutes for, the home.

The changing social pattern which is affecting the fate of the family unit is particularly marked in large cities. The inmates of flats, tenement houses and multiple dwellings are bound by no great ties of neighbourliness—they are nomadic occupants rather than home-makers. Here, men and women live in casual and fleeting relationships with other members of the community and without a fixed attachment to a settled environment. They lack the common interests, associations and traditions of the normal life which grows up in family and in neighbourhood. Thus they tend to become items in a loosely organized group, with a deterioration in a sense of civic responsibility.

McDougall states that "the capacity for social value is found in groups which have some real principle of continuity, some organization and differentiation of function, some constant body of tradition and custom". In a book entitled "The Sociology of Urban Life", Niles Carpenter makes the following statement:

> The anonymity of city life can bring a partial detachment from social obligations, and indulgence in habits of living foreign to the settled pattern of the normal family. Either with the dangerously rich or the desperately poor can a loose and mobile individualism lead to a destruction of local associations, and an indifference to the spirit of neighbourhood, which in turn affects the structure of society.

On the whole, excessive urbanization tends to destroy the life of the family and leads to insecurity and instability in social life, the moving population being divorced from a settled plan of living and experiencing a dearth of continuing friendships. Thus the town planner will need to devise housing schemes and plan community activities which will be a means of real neighbourhood for city people, providing a healthy form of fellowship and some substitute for the local and natural forms of group life.

The authors of a book devoted to the Peckham experiment in London (1926) describe an extension of the frontiers of the family to include a participation in community life, in which shared resources external to the home made for a general enrichment of family experiences. The barrenness of the social life and the relative isolation of people living in close proximity disappeared when services catering for young and old of both sexes were made available at a low cost to which each individual contributed. Despite the adverse conditions under which these families lived at home, their general physical and emotional well-being improved. The incidence of delinquent and irregular behaviour was kept at a minimum by the provision of adequate facilities for enjoyment of leisure.

Delinquency: Its Relation to Slums and Poverty.

It is generally believed that delinquency is a by-product of congested areas, of improper housing, of lack of privacy and of limited playing areas. Admittedly, the majority of juvenile delinquents are under-privileged children from impoverished, overcrowded homes, in deteriorated localities, where families crowd together in dwelling places of low rental. There is still considerable uncertainty as to the importance of overcrowding as a provocative factor in delinquent behaviour.

Dr. Norwood East, in his investigation of adolescent crime (1942), shows statistically that the relation between density of inhabitants per dwelling and the number of previous convictions is not significant, the correlation being 0·029. In the sexual offence group the number of inhabitants per dwelling is significantly smaller than in other groups.

Dr. Rhodes and Dr. Mannheim and Mr. Carr Saunders published in 1943 the result of an investigation of 2,000 delinquents, with an equal number of controls or non-delinquents from the same environment. These authors make the following statement:

> If parents of delinquents were of lower economic status we should expect to find delinquents coming from poor type houses. There is little evidence of this association in our figures. In cases of overcrowding the association between juvenile delinquents and the control group was 0·05. Equally low was the degree of association between poverty and delinquency.

Thus it would seem that the reactions of adolescents to home conditions are far from being simple and stereotyped, and that other factors operate in determining the incidence of delinquency.

Poverty, so often alleged to be one of the major causes of delinquency, is itself frequently the result of the social inadequacy of the parents. They live in slums chiefly as a result of their low wage-earning capacity, their poor intellectual endowment, or ill health, shiftlessness, indifference and lack of thrift. Their children may become uncontrollable because of unintelligent methods of control and a low standard of parenthood.

In sub-standard areas, a traditional delinquency pattern is readily established, and by a process of psychic contagion, asocial attitudes and unconventional behaviour develop in the more susceptible types of young persons. We have grown accustomed to regard delinquency as a natural sequence to the poverty of interest and lack of entertainment in the typical slum home. Such circumstances, we are led to believe, thrust the young adolescent into the community in search of amusement and relief from the uncongenial conditions in overcrowded homes. One might venture the suggestion that this movement out of the home is part of a developing social change, which is affecting also the members of families belonging to more privileged economic and social groups.

It is in the adolescent particularly that one sees a repudiation of existing social institutions and an impatience of family bonds which interfere with his freedom. The conflict between a youthful aspiration for autonomy and of parental insistence upon dependence is not a new problem. But as adolescence is the period of maximum criminality, it is important that community planners should devise schemes to supply wholesome outlets for activities which will combat undesirable influences. But more than mere occupation is necessary. Continuity of education along broad lines, not necessarily academic, and opportunities for companionship between both sexes should be available.

War-Time Hazards.

In war-time, as in other periods of national upheaval, ordinary everyday life has been disrupted. Absence of the father on active service, employment of the mother, lack of supervision of children, with irregular school attendance, opportunities for child labour, an influx of population into already overcrowded cities, are a few of the hazards that attend war activities and increase the incidence of juvenile delinquency. Standards of behaviour become confused, social controls are weakened, and the broken structure of the family makes for inconstancy and insecurity of home life.

Deplorable living conditions have resulted from the crowding of families in camps, tents and shacks, particularly in defence areas, to which a large number of families has migrated. Moreover, in these mushroom communities, facilities for play and recreation are generally inadequate. In rural districts, juvenile delinquency is less likely to appear on statistical tables. But poor homes and the monotony of life in some small towns can be responsible for undesirable conduct and maladjusted personalities.

In disintegrated neighbourhoods there is little in the way of organized sentiment to combat disturbing influences, and the tradition of delinquency becomes perpetuated. The economic insecurity of the families, the different cultural backgrounds of the groups and the failure of families to recognize their common interests, hamper the development of community spirit and neighbourhood organization.

Development of Neighbourhood and Community Life.

If one accepts as inevitable the changing structure of the family unit and regards the curtailment of its self-sufficiency as an established fact, then community planners will need to devise a programme for a reciprocal relationship between the family and neighbourhood, to the fulfilment of the claims of both. An improvement in cultural associations between neighbours could result from a wider and more generous social life, in which they might regain the cohesive qualities and richer values characteristic of the original family. It is possible that participation in war-time activities might be diverted to shared interest in peace-time projects.

Well-planned housing schemes could safeguard most of the accepted standards of the individual and the family, while providing the basis for a vigorous urban community life without loss of family identity. In the so-called "garden" cities we find encouragement for community life amongst people not too numerous to know something of one another, who can develop friendships and have a sense of common social purpose. Although dependent upon the city to some extent, economically the garden city can remain independent in its social life. But it is the sociologist rather than the architect or town planner who can interpret family needs and relate them to community resources capable of satisfying them.

Preserving the Integrity of the Family while Extending its Social Functions.

The immediate problem lies in conserving privacy as an important element in normal family life, while promoting a development of sociability and opportunities for the normal exercise of social functions. Family life can be enriched or endangered by these excursions into social living and community participation according to the quality of the interrelationships of family members. Homes in which parents and children have interests in common and a mutual understanding of individual problems, make the securest foundation for a stable and enduring social structure. Widening areas of common and shared experiences outside the home will provide new horizons for the modern family. The finest of houses, schools, playgrounds and parks are of minor importance unless children have a stable and secure family life, in which reasonable needs can be anticipated and satisfied. The family is embedded to some extent in a traditional pattern, which a mere change of house or locality will not readily alter without also an accompanying variation in attitudes towards newly assumed responsibilities.

We should be concerned not only with the erection of houses, but with the building up of homes and family life. Unfortunately our homes are becoming merely houses, and home-making has become confused with house-keeping. We need better houses; but we need also an improved standard of family life, a higher quality of parentcraft, a better appreciation of the implications of ethical conduct, and education in civic responsibility.

The popularity of prefabricated houses, ready-made, designed by an external authority, adhering to a fixed pattern, unrelated to the habits of their inmates and assembled in unrelieved groups, may serve as a warning to social planners. Regimentation of living, stereotyped forms of education, lack of incentive and encouragement to independent choice may well result in the formation of "prefabricated" personalities which conform to community patterns, denying the integrity of the individual and curtailing his initiative. In character building man still remains his own architect, and the inadequacy of the individual is no less important than the inadequacy of his environment.

Reconstruction schemes might include a new plan for living in a social situation becoming more complex and demanding, a blueprint which takes into account those traditional qualities of the family of the past which can be socially useful in the future. One can still envisage a home as the rendezvous of the family, where the emphasis is on companionship rather than on authority, and where sustaining loyalties keep the family intact. The social influence of such an institution will be enduring, if isolation and non-contributing individualism do not parade as privacy, and if community privileges and responsibilities are acknowledged and honoured.

So only will the structure of society be maintained in keeping with the broad design of the family, for which there has been found as yet no satisfactory substitute. But it is to the sociologist as much as to the architect, the town planner and the builder of community centres that we must look for direction in social reconstruction which respects the psychological as well as the material needs of the population.

COMPOUND FRACTURES OF THE EXTREMITIES DUE TO GUNSHOT WOUNDS: THE EARLY RESULTS OF TREATMENT IN THE FIELD AIDED BY PENICILLIN THERAPY.

By THOMAS F. ROSE,
Major, Australian Army Medical Corps,
AND
ARTHUR NEWSON,
Major, Australian Army Medical Corps.

IN this paper are presented the early results obtained in the treatment of 126 compound fractures of the extremities caused by gunshot wounds. (Gunshot wounds of joints are excluded from this series.) These casualties were first treated in forward surgical units and were then followed up for at least one month after being wounded, either by ourselves or by the courtesy of general hospital surgeons. Attention is focused on the healing of soft tissues, and no data are presented with regard to bony union or ultimate function.

These wounds were caused by the various missiles of modern warfare. They were of all types—perforating wounds with small entry and exit wounds, perforating wounds with large entry and exit wounds, penetrating wounds with pieces of metal retained in the bone, and gutter wounds. At times the force of impact shattered the missile so that metallic foreign bodies were scattered throughout the bone and soft tissues, even multiple exit wounds being caused. In most instances the bones were shattered at the site of fracture, and many of the fragments became secondary missiles causing widespread soft-tissue damage. Secondary fracture lines sometimes radiated up and down the shafts to implicate the articular surfaces of neighbouring joints and cause hæmarthroses.

Usually much soft-tissue destruction with hæmatoma formation had occurred, often causing excessive tension beneath intact fascial sheaths. Skin involvement varied from simple perforation to gross destruction, the latter being seen most frequently in fractures of the tibia. In some cases, neighbouring nerves and vessels were injured either by concussion or by actual division. In only one case was a main limb artery divided.

Most wounds were contaminated by dirt, vegetation and clothing, and some were already infected before surgical treatment owing to difficulties in collecting the patient from the jungle.

The simplest types of wounds were those due to rifle bullets travelling at high speed. They caused a minimum of soft-tissue destruction, provided that the bones did not cause them to deviate or to wobble, when enormous exit wounds eventuated. Even in these cases, however, bone damage was always great.

Treatment.

The aims of the early treatment of compound fractures in the field are, firstly, to save life, and secondly to save the limb—and in the case of the latter, this virtually means to prevent or minimize infection. MacFarlane(14) points out that when the blood supply is sufficient, nowadays not only can one save the majority of these limbs, but one can expect union to occur in reasonable position and without gross infection. This is due to adequate surgical measures, aided by the parenteral use of penicillin, which allows early closure of wounds, minimizes local infection and prevents spreading sepsis by penicillin-sensitive organisms, and by the local use of "Monacrin", which minimizes and helps clear up local infection due to both penicillin-sensitive and penicillin-resistant organisms.

Details of Treatment.

Field dressings and emergency splints were applied on the recovery of the patient from the jungle. Sulphamerazine was administered by mouth until penicillin therapy was able to be instituted, when 15,000 units were injected intramuscularly every three hours. Gas-gangrene antiserum and tetanus toxoid were given as a routine measure in all cases. Patients with multiple or gross injuries or fractures of the large bones required resuscitation. Stored or fresh blood was used in all instances, as their shock-like state is due to actual loss of blood, either externally or internally into the surrounding tissues, and serum is not sufficient to restore them.(18) Blood was always given rapidly at first (one litre in twenty minutes) and then at a slower rate until the patient's condition was judged suitable for operation. When facilities were available, all injured parts were radiologically examined and foreign bodies localized prior to operation.

Certain fractures due to high-velocity non-wobbling rifle bullets did not require surgical intervention, because these bullets do not carry in clothing and are self-sterilizing(10) The wounds of entrance and exit were small, there was no pronounced hæmatoma formation, and no foreign bodies were present. Such fractures were immobilized only, unless they were infected or surrounded by large muscle masses, as in the case of the femur, when operation was performed.

In all other wounds, clean or infected, surgical excision was performed under "Pentothal" anæsthesia, the soft tissues being dealt with first. Care was taken to excise all damaged tissue, to split enveloping fascia widely, especially that ensheathing large muscle masses as in the thigh or calf, and to evacuate hæmatomata. All organic foreign matter and dirt were removed, as neglect of this precaution is the main cause of later infection.

Damaged bone was dealt with as conservatively as possible, only small loose pieces being removed. There is no excuse for the removal of unnecessary fragments,(4) and even large free ones should not be removed, as it is thought that penicillin therapy enables them to act as bone grafts.(11) Pieces of bone blasted into the soft tissues away from the fracture were always removed. Metallic foreign bodies were removed from the bone whenever possible. Bentley and Thomson(2) state that this is necessary, as such foreign bodies cause harm, whereas Burns and Young(4) disagree with this. Naturally, small foreign bodies scattered through the bone and difficult to distinguish from bone fragments must be left behind, and they become incorporated in the healed shaft.(4)(14)

In those cases in which fracture lines radiated down to neighbouring joint surfaces causing hæmarthroses, no extra treatment was necessary save when a large joint was involved, when the blood was aspirated and 50,000 units of penicillin were injected into the joint cavity.

After hæmostasis had been secured by fine catgut ligatures when necessary, the wound was insufflated with penicillin-sulphanilamide powder (5,000 units of penicillin per gramme of powder). Consideration was now given to the advisability of primary suture. This was performed only in the case of clean wounds excised within a few hours of reception, which had not been contaminated with dirt or organic material, which were associated with minimal skin loss and soft-tissue damage, and in which no metallic foreign bodies were left *in situ*. Even if the foregoing criteria were satisfied, suture was performed only when the patient could be observed for one week before evacuation. The skin only was stitched with interrupted sutures of nylon or silkworm gut. If the wound was not sutured, it was covered with "Vaseline" gauze and dressings were applied.

If no X-ray examination had been made, one was carried out as soon as possible before wound revision was undertaken, on about the fourth of fifth day in cases in which suture was not performed. Any necrotic tissue or accessible metallic foreign bodies missed at the original operation were removed and hæmatomata were evacuated. If the wounds were clinically clean, and if suture could be carried out without tension, this was performed after insufflation of penicillin-sulphanilamide powder. (As the clinical appearance of the wound is the deciding factor as to the advisability of suture,(4) (5) (21) in this series bacteriological investigations were made only in the case of obviously infected wounds.) Even a raised temperature is not a contraindication to suture,(4) because it may be due to impurities in the penicillin.(11)

If the wounds were clean but œdematous, then they were insufflated with penicillin-sulphanilamide powder and dressed with "Vaseline" gauze. They were again reviewed at intervals of four or five days and sutured as soon as circumstances were favourable. The longer suture had to be delayed after ten days, the greater was the necessity for wound excision, undermining of surrounding skin and rotation of local flaps. Wounds associated with great skin loss required split skin grafts as soon as local conditions were satisfactory. Their purpose was to act as temporary cover only to obviate secondary infection, and they were usually replaced by plastic means later. Many fractures were still open at the end of a month or longer after reception of the wound, and these patients were evacuated for plastic repair.

Tubes for the local injection of penicillin, as favoured by Bentley and Thomson(2), were not used in this series. Many authorities(4) (11) (17) have found that they lead to secondary infection by penicillin resisters (*Bacillus proteus, Bacillus coli Pseudomonas pyocyaneus*) and even to sinus formation,(4) a complication which occurred in certain of our early cases.

In spite of early and apparently adequate excision, some wounds became infected. As soon as this was apparent, they were revised, necrotic material was excised, foreign bodies were removed and adequate drainage was provided by enlargement of the wound and counter-incisions where necessary. Sutures were released in wounds already sutured and the wounds were left open. Other wounds were infected before initial surgical treatment could be undertaken. These were surgically excised, foreign bodies were removed just as thoroughly as if the wounds were uninfected, and adequate drainage was provided by incision of skin and fascia.

The Local Use of "Monacrin."—Instead of applying penicillin-sulphanilamide powder to these infected wounds, 5-amino-acridine ("Monacrin") was used.(20) This is efficacious locally, not only against the pyococci, but also against *Bacillus coli* and to a lesser extent *Bacillus proteus*. It has no effect on *Pseudomonas pyocyaneus*, but if this organism is present "Monacrin" may be combined with a 2% solution of acetic acid. Shallow wounds were syringed twice a day with a 1/1,000 solution of "Monacrin", and then gauze soaked in the solution was applied. Surgical gauze has been shown to adsorb "Monacrin", but it allows it to diffuse into the tissues, so acting as a reservoir of "Monacrin".(1) Tubes attached to a "Soluvac" flask full of the solution were stitched into deep wounds, and the solution was allowed to drip continuously through them at the rate of eight drops per minute, until the infection was overcome. This treatment was continued until the wounds were clean and able to be sutured, or until plastic repair could be performed.

Not only is "Monacrin" efficacious against established local infection, but it is useful in those wounds closure of which must be delayed. Such wounds are liable to secondary infection by the Gram-negative, penicillin-resistant bacilli, especially when closed plaster casts are used.(7) (8) (9) Such infection may be minimized or even prevented by dressing the wounds with gauze soaked in "Monacrin".

The Parenteral Use of Penicillin.—It is well known that all war wounds contain pathogenic bacteria (pyococci and anaerobes) almost as soon as they are received, especially when organic foreign matter is present.(14) It has also been shown that air and bacteria may be driven into the tissues far from the missile track(13) (16) (18) and so escape even the most rigorous excision. The parenteral administration of penicillin will "freeze" these bacteria from the rest of the body and so prevent spread of infection. It cannot, however, prevent local infection when necrotic or foreign organic matter is left *in situ*(5)—only adequate surgical treatment can do this; but here again it ensures that the patient will not die of septicæmia or lose the limb from spreading sepsis.(4) (8) (11) Consequently, penicillin was injected intramuscularly every three hours in every case of this series, until it was evident that infection was not going to appear in the "clean" wounds and that it had subsided in the "dirty" wounds. Local infection due to penicillin-sensitive organisms, occurring in patients already undergoing a course of penicillin treatment, meant that necrotic material or foreign bodies, and in later cases sequestra, still required removal. In these infections, it was noticed that penicillin rapidly relieved pain in the lesions—a point commented upon by Innis and Ellis.(11) In cases of later suture, in which penicillin therapy had ceased some time before, it was recommenced a day before suture was to be performed and continued until it was clear that no infection would occur.

Immobilization.—No attempt was made to secure perfect alignment at the initial operation, as immobilization and not alignment is the surgeon's business in the forward area.(3) (14) Routine methods of immobilization were used, and they will not be discussed here, except for the statement that in no instance was internal fixation used. The main reliance was placed upon the use of plaster casts. Closed plaster casts, padded or unpadded, split or unsplit, have certain grave disadvantages quite apart from the known dangers of limb constriction. Fractures with open wounds in limbs encased in plaster, even when penicillin therapy was being given, rapidly became secondarily infected by staphylococci, *Bacillus proteus*, *Bacillus coli* and *Pseudomonas pyocyaneus*,(7)(8)(9) and gross infections from pyococci and anaerobes may occur in sutured wounds without being recognized, especially when the patient is in transit.(6) (11) When plaster casts were used in this series to secure immobilization, windows were always cut over the wounds so that they could be inspected and dressed when necessary. Complete casts were not used until the skin was completely healed.

General Treatment.—During the period of treatment, the patient's general condition was watched. Anæmia was treated by repeated blood transfusions, and concurrent diseases such as malaria and hookworm infestations and skin rashes were treated. Full adequate dietary was ensured.

Results.

In the discussion of the results, the periods of time and amounts of penicillin represent an average figure for each particular group.

Table I is a brief summary of the methods of treatment used in this series. Thus, of the 126 fractures, 31 were of the type requiring no surgical intervention. All wounds healed by first intention, and all patients were given 450,000 units of penicillin, a start being made eight hours after reception of the wound. Thirty-one wounds were treated by primary suture; in four cases the result was a failure. Primary suture was carried out nine hours after reception of the wound; in the successful cases 520,000 units of penicillin were required, and healing was complete in sixteen days. These cases were chosen carefully, and this probably accounts for the small number of failures. Ogilvie⁽¹⁸⁾ and Churchill⁽⁵⁾ both state that primary suture should never be performed because the recognition of devitalized tissue is often impossible, and war wounds can never be rendered entirely healthy and sterile by surgical toilet. Nevertheless, the results appear to justify this measure in the treatment of selected clean wounds associated with little soft-tissue damage, and uncontaminated by organic foreign matter, when penicillin therapy is given.

Thirty fractures were treated by delayed primary suture, and there was only one failure. Initial operation was performed eight hours after the reception of the wound; suture was performed about the fifth day; the wounds healed in sixteen days, and 800,000 units of penicillin were required. This period, the fourth to the ninth day, is the ideal time for suture, provided early and adequate surgical excision has been performed.⁽¹⁵⁾⁽¹⁹⁾ At this time, penicillin-sensitive organisms are under control and penicillin-resisters are at a minimum.⁽¹¹⁾

Secondary suture was performed in eleven cases, and there were two failures. The initial surgical treatment was given ten hours after reception of the wound, suture was performed on the fifteenth day, and the wounds healed in seventeen days, 1,100,000 units of penicillin being required. The reason for late suture was prolonged œdema in nine cases and established sepsis prior to surgical treatment in two cases.

Thus, in seventy-two cases suture was performed in the first month after reception of the wound, and in seven cases the result was a failure. These failures with their later results are summarized in Table II. As may be seen, infection was the cause of four of the failures.

TABLE I.
Summary of Methods of Treatment.

Bone Fractured.	Number of Cases.	No Surgical Treatment.	Primary Suture.		Delayed Primary Suture.		Secondary Suture.		No Suture Performed in First Five Weeks.	Amputations.	
			Success.	Failure.	Success.	Failure.	Success.	Failure.		Immediate.	Late.
Clavicle	1	—	1	—	—	—	—	—	—	—	—
Scapula	6	2	4	—	—	—	—	—	—	—	—
Humerus	18	7	3	—	5	—	2	—	—	1	—
Radius	8	2	3	—	3	—	—	—	—	—	—
Ulna	13	4	—	—	6	—	2	—	1	—	—
Metacarpus	4	—	2	—	1	—	1	—	—	—	—
Fingers	14	4	3	—	1	—	—	—	—	4	2
Femur	11	—	1	1	5	1	2	—	1	—	—
Patella	1	—	—	1	—	—	—	—	—	—	—
Tibia and fibula	8	—	—	—	2	—	1	—	5	—	—
Tibia	9	2	2	—	1	—	—	1	3	—	—
Fibula	12	4	5	—	2	—	1	—	—	—	—
Tarsus	2	—	—	—	1	—	—	—	1	—	—
Metatarsus	8	2	2	2	—	—	—	1	1	—	—
Toes	11	4	1	—	2	—	—	—	—	4	—
Total	126	31	27	4	29	1	9	2	12	9	2

TABLE II.
Unsuccessful Suture.

Case Number and Bone Fractured.	Hours before Initial Surgical Treatment.	Time before Suture.	Day of Failure after Suture.	Cause of Failure.	Result.	Units of Penicillin Used.
I. Femoral shaft	8	8 hours.	Fourth.	Hæmatoma.	Evacuation of hæmatoma, resutured four days later, healing in 14 days.	1,000,000
II. Patella (superficial, with one crack involving the articular surface).	12	12 hours.	Fourth.	Infection (*Staphylococcus aureus* and *Bacillus subtilis*).	Immediate revision performed, healing by granulation in one month; joint not infected.	915,000 and 200,000 into joint.
III. Metatarsus ..	2	2 hours.	Fifth.	Infection (*Staphylococcus aureus* and *Bacillus proteus*).	Immediate revision performed, healing by granulation tissue in one month.	720,000
IV. Metatarsus ..	8	8 hours.	Fourth.	Œdema.	Successful suture six days later, healing in 16 days.	1,200,000
V. Femoral shaft	12	6 days.	Fifth.	Infection (*Staphylococcus aureus*).	Immediate revision performed, wound drained for one month, when a sequestrum was removed, after which healing occurred.	2,400,000
VI. Tibia ..	7	12 days.	Sixth.	Infection (*Bacillus proteus*).	Healed one month later by granulation.	1,080,000
VII. Metatarsus ..	18	14 days.	Fourth.	Œdema.	Healed two weeks later by granulation tissue.	600,000

Twelve wounds were unable to be closed in the first month after reception, namely: eight fractures of the tibia (Cases I, II, and IX to XIV in Table III) because of skin loss and infection; one fracture of the femur (Case VII, Table III) and one fracture of the tarsus (Case XVI, Table III) owing to infection; and one fracture of the ulna and one fracture of the metatarsus, owing to skin loss alone. At the end of five weeks after reception of the wound, six wounds were still discharging, though in lessening amount, and four were just about ready for plastic measures. Two wounds healed without further surgical treatment, one in five and the other in eight weeks.

It is significant that the delayed healing was partially or wholly due to infection in ten of these twelve cases, and that eight of these fractured bones were badly shattered tibiæ associated with much soft-tissue damage and skin loss. These are the most serious of all limb fractures, because there is so much comminution of the shafts that it may be impossible to eradicate all necrotic tissue and foreign bodies. This fact, as well as the loss of skin, predisposes the wound to local infection in the early stages. In the later stages, sequestra require removal and complicated plastic procedures are necessary for closure of the wound.

Infected Wounds.

The most important complication of compound fractures in warfare is infection. It occurred in 15% to 18% of 1,400 cases reported by Hampton and Parker(10) because of inadequate excision. The worst feature of infection is the risk of death from blood-stream invasion or loss of limb from spreading sepsis due to pyococcal and anaerobic organisms—a risk which the parenteral administration of penicillin has minimized.(11) In this series there was no instance of severe spreading sepsis, or of blood-stream or gas-gangrene infection. However, local infection by penicillin-resisters, notably *Bacillus proteus*, *Bacillus coli* and *Pseudomonas pyocyaneus*, prolongs healing time, prevents the early closure of wounds and leads to sequestrum formation and persistent sinuses.(12) That infection by *Bacillus proteus* is not to be regarded lightly has been shown by Propper-Grashchenkov,(22) who showed that open spinal column wounds were associated with a higher mortality rate when infected by this organism. These effects have to some extent been minimized by the local application of "Monacrin".

There were 17 fractures associated with infected wounds in this series, six being already infected before surgical treatment, and eleven becoming infected after surgery. These cases are summarized completely in Table III, in

TABLE III.

Summary of Results of Infected Wounds.

Case Number and Bone Fractured.	Delay before Initial Surgical Treatment.	Organisms.	Units of Penicillin Used Prior to Infection.	Progress.	Units of Penicillin Used to Control Infection.
Wounds Infected Before Operation.					
I. Tibia and fibula	1 week.	*Staphylococcus aureus*, *Bacillus proteus*.	—	Wound excised. Sequestrum removed three weeks later, wound healing a month later.	2,400,000
II. Tibia and fibula	2 days.	*Streptococcus hæmolyticus*, *Bacillus coli*.	—	Wound excised. Ready for plastic repair four weeks later.	1,200,000
III. Metatarsus ..	1 week.	*Staphylococcus aureus*, *Bacillus proteus*.	—	Wound excised. Healed in one month by granulation tissue.	825,000
IV. Metacarpus ..	1 week.	*Bacillus proteus*.	—	Wound excised. Healed in one month by granulation tissue.	400,000
V. Ulna	1 week.	*Staphylococcus aureus*, *Bacillus proteus*.	—	Wound excised, followed by suture five days later, the wound healing in 16 days.	825,000
VI. Ulna	1 week.	*Staphylococcus aureus*, *Bacillus proteus*.	—	Wound excised, followed by suture seven days later, healing in 15 days.	480,000
Wounds Infected After Operation.					
VII. Femur.. ..	10 hours.	*Staphylococcus aureus*, *Bacillus proteus*.	600,000	Abscess evacuated and necrotic bone removed on twelfth day. Drainage still present five weeks later, but lessening in amount.	600,000
VIII. Femur.. ..	—	—	—	See Case V, Table II.	
IX. Tibia and fibula	12 hours.	*Staphylococcus aureus*, with *Pseudomonas pyocyaneus*.	480,000	Heavy discharge on tenth day. Necrotic bone removed. Drainage still present in fifth week, but lessening in amount.	720,000
X. Tibia and fibula	5 hours.	*Bacillus proteus*.	360,000	Heavy discharge on third day. Wound revised, ready for plastic repair in fifth week.	720,000
XI. Tibia	7 hours.	*Bacillus proteus*.	600,000	Foreign body removed third day. Secondary suture seventeenth day, but wound broke down five days later, healing by granulation tissue in 14 days.	480,000
XII. Tibia	5 hours.	*Staphylococcus aureus*, *Bacillus proteus*, *Pseudomonas pyocyaneus*.	360,000	Heavy discharge on third day. Wound revision performed. Discharge present, but lessening four weeks later.	960,000
XIII. Tibia	12 hours.	*Bacillus proteus*.	360,000	Heavy discharge on third day. Wound revision performed. Discharge present, but lessening four weeks later.	840,000
XIV. Tibia	10 hours.	*Staphylococcus aureus*, *Bacillus subtilis*.	240,000	Heavy discharge on third day. Wound revision performed. Discharge present, but lessening four weeks later.	600,000
XV. Patella ..	—	—	—	See Case II, Table II.	
XVI. Talus	9 hours.	*Staphylococcus aureus*, *Bacillus proteus*.	240,000 and 50,000 in ankle joint.	Bullet removed from talus two days later,; discharge still present five weeks later, but in lessening amount. Joint not infected.	720,000 and 150,000 into joint.
XVII. Metatarsal ..	—	—	—	See Case III, Table II.	

which it may be seen that eleven infected wounds were still open at the end of five weeks. The organisms responsible are tabulated in Table IV. The commonest was *Staphylococcus aureus* (penicillin-sensitive) in a mixture with one or other of the Gram-negative bacilli (12 instances). There was only one streptococcal infection, which occurred in a wound infected before surgical treatment.

TABLE IV.
Organisms Present in Infected Wounds.

Organism.	*Staphylococcus aureus.*	*Bacillus proteus.*	*Streptococcus hæmolyticus.*
Pure infection	1	4	—
Mixed with *Bacillus proteus*	7	—	—
Mixed with *Bacillus proteus* and *Pseudomonas pyocyaneus*	2	—	—
Mixed with *Bacillus coli* ..	—	—	1
Mixed with *Bacillus subtilis*	2	—	—
Total	12	4	1

Secondary Involvement of Neighbouring Joints

Apart from finger and toe joints, large joints were involved only six times—the knee joint three times, the shoulder, elbow and ankle once only. Treatment of the fracture itself is in no wise affected. The joint is aspirated at the original operation and 50,000 units of penicillin are injected into it. This procedure is repeated every second day until no further fluid is obtained, usually in one week. On an average, 150,000 units of penicillin were used locally in these joints. In two cases (Case II, Table II, knee, and Case XVI, Table III, ankle), superficial infection occurred, but the joints were unaffected.

Amputations.

Only nine immediate amputations were performed. The most serious was necessitated by a badly contaminated compound fracture of the humerus with complete division of the brachial artery and nerve trunks and gross soft-tissue and skin damage. Immediate primary amputation was performed at the fracture site, skin flaps being left open; 880,000 units of penicillin prevented infection by penicillin-sensitive organisms, but *Bacillus proteus* infection delayed closure of the flaps.

Eight immediate amputations of phalanges were performed because of gross destruction of bone and soft tissues. All wounds healed successfully by primary suture, 420,000 units of penicillin being used. Two fingers were amputated at the end of a month because of loss of function due to tendon destruction and joint ankylosis.

Conclusions.

1. The principles of treatment in compound fractures are, firstly, to save life, and secondly, to save the limb.
2. In order to hasten recovery and minimize secondary infection, the wound should be closed as soon as possible. Of the 126 wounds, 31 did not require excision and all healed by first intention, 31 were treated by primary suture with four failures, 30 were treated by delayed secondary suture with one failure, and 11 were treated by secondary suture, with two failures. Thus, 72 wounds were able to be sutured within one month of reception with seven failures, chiefly because of the onset of infection.
3. Twelve wounds were unable to be sutured in the first month after reception, chiefly because of the onset of infection and of skin loss.
4. Seventeen wounds were infected locally, six before and eleven after the original surgical excision. The chief organism was a penicillin-sensitive *Staphylococcus aureus* usually associated with Gram-negative, penicillin-resistant bacilli, and the cause was the continued presence of necrotic material. The local effects of these infections were to delay skin suture and plastic repair and to cause breakdown in some sutured wounds.
5. The efficacy of penicillin given parenterally is shown in that there was no case of septicæmia, severe sepsis or gas gangrene. Penicillin is only an adjuvant to surgical treatment, as it cannot combat necrotic material or eradicate bacteria from it, though it will prevent infection from spreading into the tissues.
6. "Monacrin" is shown to be efficacious in the local treatment of bone infection due to the pyogenic cocci and the penicillin-resistant Gram-negative bacilli.
7. Treatment of shattered tibiæ associated with skin loss is the greatest problem in gunshot wounds of bone. Of 17 fractured tibiæ, eight which were severely comminuted, became infected locally, and the wounds were still discharging five weeks after reception. The less severely fractured tibiæ associated with no great skin loss were more successfully dealt with, seven wounds being sutured early, and only one failure from secondary suture being recorded.

Summary.

A report of a series of 126 gunshot wounds of bones of the extremities is presented. The surgical treatment aided by the parenteral administration of penicillin and the local use of "Monacrin" is described, and the early results are given.

Acknowledgement.

We wish to thank Major-General S. R. Burston, Director-General of Medical Services, Australian Military Forces, for permission to publish this paper.

References.

(1) A. Albert and W. S. Gledhill: "Adsorption of Acridine by Gauze", *The Lancet*, Volume I, June 10, 1944, page 759.

(2) F. H. Bentley, S. Thomson, A. K. Bingham, J. A. Key and M. H. Wostenholm: "Treatment of Compound Fractures by Early Wound Suture and Penicillin", *The Lancet*, Volume I, February 24, 1945, page 232.

(3) G. Blackburn: "Surgery in the Field. Wounds of the Extremities", *The Lancet*, Volume I, March 18, 1944, page 361.

(4) B. H. Burns and R. H. Young: "Compound Fractures of the Femur Treated with the Aid of Penicillin", *The Lancet*, Volume I, February 24, 1945, page 236.

(5) E. D. Churchill: "The Surgical Management of the Wounds of the Mediterranean Theatre at the Time of the Fall of Rome", *Annals of Surgery*, Volume CXX, September, 1944, page 268.

(6) L. K. Fergusson: "Surgical Casualties of Amphibious Warfare", *United States Naval Medical Bulletin*, Volume XLIII, 1944, page 23.

(7) I. Fraser, W. Patrick and S. Thomson: Report to War Office, November, 1943; quoted by Bentley and Thomson, *loco citato*.

(8) R. Furlong and J. M. P. Clark: "On the Use of Penicillin to Control Infection in Open Fractures of the Femur; Interim Report", *The British Journal of Surgery*, Volume XXXII (Supplement), 1944, page 147.

(8) R. Furlong and J. M. Clark: Report to War Office, May, 1944; quoted by Bentley and Thomson, *loco citato*.

(10) R. Hampton, junior, and J. M. Parker: "Observations of Battle Fractures of the Extremities". *Surgery*, Volume XV, 1944, page 869.

(11) A. Innis and V. H. Ellis: "Battle Casualties Treated with Penicillin", *The Lancet*, Volume I, April, 28, 1945, page 522.

(12) J. S. Jeffrey: "Battle Casualty Fractures in Italy. Treatment with Penicillin", *The British Journal of Surgery*, Volume XXXII (Supplement), 1944, page 144.

(13) H. Kemp: "X-rays in Diagnosis and Localisation of Gas Gangrene", *The Lancet*, Volume I, March 17, 1945, page 332.

(14) J. A. MacFarlane: "Compound Fractures in War", *The Lancet*, Volume I, February 3, 1945, page 135.

(15) E. A. MacNaughton: *British Medical Journal*, Volume I, January 13, 1945, page 56.

(16) K. Mârtenson: "Studies in the Prophylaxis and Therapy of Wound Infection with Special Reference to Local Treatment with Sulphathiazole", *Acta Chirurgica Scandinavica*, Supplement 82, 1943; abstracted in *Bulletin of War Medicine*, Volume V, February, 1945, page 357.

(17) W. McKissock, V. Logue and I. Bartholomew: "Need for Asepsis in Local Penicillin Therapy", *British Medical Journal*, Volume II, 1944, page 551.

(18) W. H. Ogilvie: "Some Applications of the Surgical Lessons of War to Civil Practice", *British Medical Journal*, Volume I, May 5, 1945, page 620.

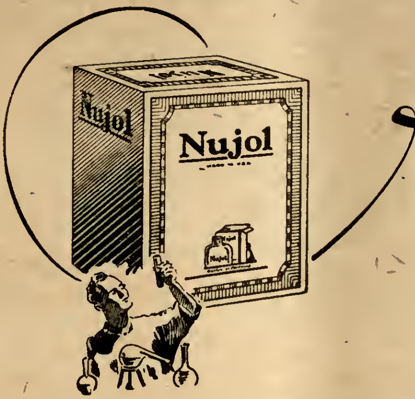
(19) "Penicillin in Compound Fractures", *The Lancet*, Volume I, February 24, 1945, page 243.

(20) H. R. G. Poate: "Acridine in Septic Wounds", *The Lancet*, Volume 2, August 19, 1944, page 238.

(21) T. R. Sarjeant and W. A. Morton: "Delayed Suture of Soft Tissue Wounds", *The Lancet*, Volume II, September 9, 1944, page 333.

(22) N. I. Propper-Grashchenkov: "Treatment of Spinal Column and Spinal Cord Wounds", *American Review of Anglo-Soviet Medicine*, Volume II, April, 1945, page 292.

(23) H. Turnbull: "A Rational Treatment of Gunshot Wounds of Long Bones with Established Sepsis", *The Australian and New Zealand Journal of Surgery*, Volume XIV, July, 1944, page 3.

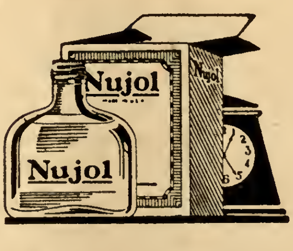


Sealed FOR COMPLETE PROTECTION

Nujol comes to you in hygienically sealed cartons to assure greater freedom from the risk of exterior contamination. Constant laboratory tests preserve that uniform quality and viscosity acknowledged by medical men throughout the world, and in accord with the exacting requirements of the British Pharmacopœia.

Nujol is most efficacious in aiding intestinal lubrication therapy, and the rigid standard of purity, which never varies, makes Nujol a most dependable and consistent liquid paraffin for the treatment of constipation.

Nujol



STANCO (AUST.) PTY. LTD.
15 Grosvenor Street - - - - - Sydney

TYROTHRICIN

A BACTERICIDAL AGENT FOR TOPICAL USE

(*Not for Injection*)

TYROTHRICIN, a natural bactericidal agent found in the aerobic spore bearing bacterium, *Bacillus brevis*, is effective against Gram-positive organisms, including pneumococci, staphylococci, streptococci, diphtheria bacilli, and others; it is not effective against Gram-negative organisms.

Tyrothricin is intended for treatment of the following conditions:

INFECTED WOUNDS
VARIOUS TYPES OF ULCERS
ABSCESSES
OSTEOMYELITIS
CERTAIN INFECTIONS OF THE EYE
NASAL SINUS, AND PLEURAL CAVITY

Tyrothricin is supplied for topical use only and should never be administered in any other way.

For general clinical use, a concentration of approximately 33 mg. per hundred cubic centimetres will be found satisfactory for the majority of infections. This concentration does not appear to inhibit migration of lymphocytes or macrophages or the growth of normal fibroblasts.

A suspension containing 33 mg. per hundred cubic centimetres may occasionally be somewhat irritating; in such cases, concentrations of 5 mg., 10 mg., or 20 mg. per hundred cubic centimetres may be used.

Concentrations greater than 33 mg. per hundred cubic centimetres may be used in treatment of infections caused by organisms unusually resistant to Tyrothricin; however, concentrations above 50 mg. per hundred cubic centimetres are likely to be somewhat irritating to tissues, especially mucous membranes of the paranasal sinuses.

Tyrothricin is supplied in 10-cc. vials.

Parke, Davis and Company, Limited
(INC. U.S.A.)
SYDNEY

Reports of Cases.

A CASE OF ADDISON'S SUPRARENAL SYNDROME OF PRIMARY PITUITARY ORIGIN.

By W. R. Lang.

From the Medical Professorial Unit, Royal Prince Alfred Hospital, and the Department of Medicine, University of Sydney.

Clinical Record.

Mrs. T., a married woman, aged fifty-three years, was first admitted to the Royal Prince Alfred Hospital, Sydney, on February 23, 1945, in a condition of collapse. She stated that she had last felt well about fourteen years previously. Since then she had been troubled by a gradually increasing lack of energy, until now she persistently felt tired. Her skin was slowly becoming more deeply pigmented, and during the last six months she had suffered from attacks of severe and persistent vomiting accompanied by epigastric pain. She had eight children, ranging in age from sixteen years to thirty-four years. There was no evidence of tuberculosis in her family.

On examination of the patient, her skin was much pigmented, especially over those areas exposed to the sun. The mucous membranes of the mouth were also slightly pigmented. She was very emaciated. No abnormality was detected in the character or distribution of hair on her body, and no abnormality could be detected on palpation of the thyreoid gland. The systolic blood pressure was 110 millimetres of mercury, the diastolic pressure 75 millimetres, and the pulse rate was 65 per minute. Her temperature was normal. An X-ray examination of her lungs was made; and this revealed some shadows indicative of mild bronchitic changes, but there was no evidence of any tuberculous lesion.

A diagnosis of Addison's disease was made and the patient responded well to sodium chloride therapy. After three weeks her condition had improved considerably. A 200-milligramme pellet of desoxycorticosterone acetate was then implanted into her left rectus muscle, and she was allowed to go home. However, she returned five days later in a state of severe collapse. The systolic blood pressure was 94 millimetres of mercury and the diastolic pressure 68 millimetres, and her pulse rate was 85 per minute. She was given eschatin, an adrenal cortical extract, the dose to begin with being four millilitres, and being gradually increased up to 20 millilitres, which was given in one litre of saline solution. However, she failed to respond to this treatment, and died in a typical Addisonian crisis, twenty-two days after her admission to hospital.

A provisional diagnosis of Addison's disease was made.

Post-Mortem Examination.

A post-mortem examination was carried out eight hours after death by Dr. Elizabeth Himmelhoch, of the Royal Prince Alfred Hospital staff. The body was considerably wasted, the subcutaneous fat being scanty. In both adrenal glands atrophic changes were present. The left gland was about the size of a normal lymph gland; the right gland was almost completely absent, being represented by a small cystic mass. The pituitary gland consisted of a small piece of glandular substance adherent to the stalk. The thyreoid gland was pale, small and fibrotic, especially the left lobe. The parathyreoids were not seen. Both ovaries and the uterus were small and fibrotic. The stomach mucosa was thin, smooth and atrophic. The only abnormality found in the lungs was a fibrous scar at the apex of the upper lobe of the left lung. Macroscopic examination disclosed no abnormalities in the heart, liver, kidneys and pancreas.

Histological examination of the adrenals showed that the left gland had a thickened capsule. Normal anatomy and structure were completely lost. The cells were devoid of their normal lipoid content. Considerable lymphocytic infiltration was present. Fibrous stroma was increased and medulla was absent. In the right adrenal a severe degree of disorganization of the cells was found. Cortical tissue was almost completely absent. In this gland also pronounced lymphocytic infiltration and an increase in fibrous stroma were observed. Neither gland showed any evidence of tuberculous infection.

In the pituitary, only the anterior and middle lobes could be distinguished. The most striking feature was the almost complete absence of basophile cells in the anterior lobe, which consisted largely of chromophobe cells; these were large and swollen and contained pyknotic nuclei. There was no evidence of infarction.

In the thyreoid a pronounced excess of fibrous tissue was present separating the acini. The acini were much reduced in size and number and were lined with a low, inactive type of endothelium; they contained little colloid. The whole gland was densely and diffusely infiltrated with lymphocytes.

In the ovaries, most of the parenchyma had been replaced by fibrous tissue. There was no evidence of any *corpora lutea* or *corpora fibrosa.*

The apical scar in the left lung consisted of dense fibrous tissue surrounding a few atrophic bronchioles and alveoli. This may possibly have been a tuberculous lesion.

Discussion.

This condition falls amongst those clinical syndromes commonly classed as "pluriglandular". It has been clearly shown, however, that many of the functions of the various endocrine glands are primarily under the control of the pituitary gland, and that it is owing to alteration in the secretions of the many different hormones of this gland that the various types of syndromes arise.

In Cushing's syndrome a basophile adenoma of the anterior lobe of the pituitary is associated with hyperplasia and hypersecretion of the cells of the adrenal cortex, indicating that it is the basophile cells which secrete the corticotrophic hormone. On the other hand, in typical Addison's syndrome due to primary atrophy of the adrenal cortex, there is an increase in the basophile cells of the pituitary, which is probably of a compensatory nature. Thus there is undoubtedly a close relationship between the basophile cells of the pituitary and the cortical cells of the adrenal glands. In this case there was a considerable deficiency in the number of basophile cells in the pituitary, suggesting that the primary pathological change was hypoplasia and hypofunction of these basophile cells and that the atrophy of the cortical cells of the adrenals was secondary to this. As far as can be ascertained, no previous case has been recorded of Addison's syndrome associated with a pronounced deficiency of the pituitary basophile cells.

Sheehan(1) has investigated a number of cases in which the clinical diagnosis of Simmonds's cachexia was made and has found that in many of these cases necrosis of the pituitary gland was present, so massive as to suggest that it could have been caused only by occlusion of the main arterial supply to the gland. Sheehan has also obtained evidence of a severe post-partum hæmorrhage into the pituitary in a number of these cases, and so he has collectively termed them "massive post-partum necrosis of the pituitary". In the present case there is no evidence of a post-partum hæmorrhage with necrosis in the pituitary, although the possibility that this may have occurred cannot be excluded.

Castleman and Hertz(2) have reported that many cases in which the clinical diagnosis of Simmonds's cachexia is made are interrupted by severe crises, the main feature of which is a profound state of collapse, and they have suggested that these crises are in all probability due to a deficiency in the adrenal cortical hormone secondary to failure in the secretion of the corticotrophic hormone by the pituitary.

The explanation of the failure to respond to desoxycorticosterone acetate and eschatin is still obscure, but it is possible that some patients with the clinical diagnosis of Addison's syndrome who fail to respond to substitution therapy have their primary pathological lesion in the pituitary gland. In this respect they would present an analogy with patients suffering from hypothyreoidism of primary pituitary origin who do not respond well to ordinary therapeutic doses of thyreoid extract.

Summary.

A case of Addison's suprarenal syndrome with pluriglandular atrophy and almost complete absence of the basophile cells of the pituitary is described. Evidence is presented that the atrophy of the adrenals was secondary to deficiency of secretion of the corticotrophic hormone of the pituitary.

Acknowledgements.

I wish to express my indebtedness to Professor C. G. Lambie for his help and advice and also to members of the pathology department at the medical school of the University of Sydney.

References.

(1) H. L. Sheehan: "Post-Partum Necrosis of the Anterior Pituitary", *The Journal of Pathology and Bacteriology*, Volume XLV, 1937, page 189.

(2) B. Castleman and G. Hertz: "Pituitary Fibrosis with Myxedema", *Archives of Pathology*, Volume XXVII, 1939, page 69.

(3) W. Boyd: "Pathology of Internal Diseases", Third Edition, pages 469 and 549.

Reviews.

VENEREAL DISEASE.

The second edition of the "Handbook of Diagnosis and Treatment of Venereal Disease", by A. E. W. McLachlan, follows seventeen months after the first edition, and brings the publication up to date by including information concerning the use of penicillin in venereal disease.[1]

The volume maintains its conciseness and there is no change in the general arrangement of material. It has expanded by six pages and there is an additional coloured illustration showing acute gonorrhœa in the female.

False serological reactions likely to lead to an erroneous diagnosis of syphilis are discussed in greater detail in this edition, and the clinician is warned of the need "for the greatest caution before accepting as incontrovertible proof of syphilis, the sole evidence of an unexpected positive serological reaction".

"Neo-Halarsine" has been added to the list of trivalent arsenicals under the oxyphenarsine group and the dosage and arsenic percentage are given for bismuth acetarsol, and tryparsone bismuth in the arsenic bismuth compounds.

Intensive arsenotherapy has received greater consideration and descriptions of the twenty-day and seven-week courses have been added. The use of penicillin in the treatment of syphilis is mentioned briefly with the reservation that the optimum time dosage has not yet been finally determined. The course mentioned is a total of 2,400,000 Oxford units of penicillin given in doses of 40,000 Oxford units every three hours. Practice today requires at least a total of 3,600,000 Oxford units, and experience may show that even larger total dosage is required.

Reference is made to combined penicillin-arsenotherapy in which two injections of neoarsphenamine (0·45 gramme) and one of bismuth (0·3 gramme) are given during the course of routine penicillin therapy, and this is followed by a full unit course of neoarsphenamine and bismuth in the ensuing nine weeks.

It is well to remember that the use of penicillin alone in the treatment of syphilis has not yet been subjected to the test of time, and although an unknown number of syphilitic infections may have been completely overcome, the percentage of failures remains yet to be disclosed in the years ahead. McLachlan warns of "the absolute necessity for the most careful observation over a minimum period of two years and examination of the cerebro-spinal fluid ten to fourteen days after the completion of treatment". Clinical and serological examination is recommended monthly for the first year following on penicillin treatment and at periods of three months during the second year.

In the section dealing with gonorrhœa, reference to the gonococcal complement fixation test has been expanded. While insisting that in tests of cure "a persistently positive reaction indicates the necessity for the most thorough clinical and bacteriological investigation to detect any latent focus", the author further states that cure may be safely assumed despite a continued "positive complement deviation test" if these other investigations are consistently "negative" over a period of six months. This statement may be considered applicable only to the male patient by many who have had long experience with infected females, and some may not be prepared to accept it even for males.

In the section dealing with the incision of a periurethral abscess by aid of a urethroscopic tube, the advice has been added to relax any air dilatation of the urethra before free incision so as to obviate any risk of air embolism.

In regard to bacteriological examination of females it is pointed out that "provisional exclusion of gonococcal infection should not be assumed until after a series of three to five negative tests have been obtained over a period of fourteen days", and that "complete exclusion necessitates observations over a period of three months". This need for careful investigation cannot be too strongly emphasized.

Throughout this new edition the references made to penicillin are brief, and a chapter dealing in greater detail with its uses would, we think, be a further improvement in an excellent little handbook. The volume may be recommended with confidence to those who seek a clear yet concise guide to the diagnosis and treatment of venereal disease.

OUTLINES OF PHYSICAL THERAPY.

"Outlines of Physical Methods in Medicine", by G. D. Kersley,[1] is no more than the title implies, but nevertheless this little book has a wealth of information in its eighty-five pages. That the author has had an extensive experience in the use of physical aids in treatment is shown by the practical manner in which he describes the various procedures. The various types of electrotherapy are discussed at some length and the different circuits used are illustrated clearly. The chapter on remedial exercises for the various joints and muscle groups is excellently written. Occupational therapy, which is so often glossed over, is also dealt with fully and the most suitable activities for the different disabilities are listed. It is pleasing to see that the value of occupational therapy, especially for sufferers from chronic illnesses, is being appreciated. As stated in the foreword, the book serves to emphasize the importance of cooperation between doctors and masseuses if the patient is to derive the utmost benefit from treatment. All concerned with the use of physical therapy will value this work for its many practical suggestions.

SURGICAL PATHOLOGY.

Despite the obvious difficulties of the past few years there has been produced another edition of "A Text-Book of Surgical Pathology".[2] It differs in no way from preceding editions in its clarity, its mature and considered opinion, and its authoritative teaching. All the important contributions of the last four years to surgical pathology have received their due place. Naturally, therefore, recent experiences of war surgery have influenced the opening chapters so that the shock syndrome, anaerobic streptococcal cellulitis and myositis and allied topics are considered. It is disappointing to find that liver necrosis is not mentioned in the section on burns, although this may have been accepted as due solely to tannic acid.

The total amount of new material in the book is not great. There is no undue emphasis on new and rare diseases. Yet throughout it is obvious that recent literature has affected most sections. There is a small but adequate bibliography at the end of each chapter.

---

[1] "Handbook of Diagnosis and Treatment of Venereal Disease", by A. E. W. McLachlan, M.B., Ch.B. (Edinburgh), D.P.H., F.R.S. (Edinburgh); Second Edition; 1945. Edinburgh: E. and S. Livingstone Limited. 7¼" × 5", pp. 379, with many illustrations, some in colour. Price: 15s. net, postage 7d.

[1] "Outlines of Physical Methods in Medicine", by G. D. Kersley, M.A., M.D., F.R.C.P.; 1945. London: William Heinemann (Medical Books) Limited. 7¼" × 5", pp. 95. Price: 6s. net.

[2] "A Text-Book of Surgical Pathology", by Charles F. W. Illingworth, M.D., Ch.M., F.R.C.S. (Edinburgh), and Bruce M. Dick, M.B., F.R.C.S. (Edinburgh); Fifth Edition; 1945. London: J. and A. Churchill Limited. 9¾" × 6", pp. 736, with 306 illustrations. Price: 42s.

The Medical Journal of Australia

SATURDAY, MARCH 9, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

"THE STORY OF A GREAT ACHIEVEMENT."

To say that the war of 1939-1945 was won not only on the battlefield, on the sea and in the air, but also in the workshops and factories of the allied nations, is to say something that has been unmistakably evident. It is, however, a remark that must be repeated just now for several reasons. The first is that everybody in this country and doubtless in others does not realize the magnitude of the task that Britain had to face, the way in which the people as a whole put all that they were and all that they had into the job of winning, the cohesion shown by them and their allies and the enormous war weapon that they forged to force victory from the hands of a resolute enemy. The second reason for repetition has to do with rehabilitation, that word which falls so easily from our lips. The greater the dislocation of social life needed to win the war, the more difficult will be the return to life lived on a peace-time basis. Sailors and soldiers and airmen are not the only members of the community who have to readjust their activities of mind and body now that the war has ended. The Britisher is not given to blowing his own trumpet, but there is every reason why the world at large should know what Britain accomplished in her highly geared war-winning effort. *The Times*, of London, has tried to tell the world in a special "Record of British War Production", a thirty-two page publication in the format of the everyday edition of *The Times*. The Right Honourable Oliver Lyttleton, who was Minister for Production from March, 1942, to July, 1945, in a foreword points out that in the record there is collected together for the first time in one document a comprehensive summary of the many and varied aspects of Britain's achievement in war production. It would be quite impossible to summarize this summary, but at the risk of telling some of our readers what they already know, we propose to mention some of the more important facts. This may help those who, in the language of the prophet, seeing see not, and hearing hear not, neither do they understand. Those who do not understand include those who will not understand because their heart is "waxed gross". Those who do know and understand may welcome a restatement of some of the facts; they would certainly find the "record" set out by *The Times* of the most absorbing interest.

In September, 1939, Britain was woefully unprepared for war, but in the early summer of 1940 when most of her "small and painfully built up stocks of military equipment" lay burnt or captured in Belgium, the challenge was still more dreadful. Britain then stood alone against a fully mobilized Germany. Her people were almost unarmed, she was isolated by the collapse of her Continental allies, her economy was not really geared for war, and she was threatened with the cutting of her sea lifelines. The picture on "D Day" was very different. In the interval between these two events British industry and the British people "through deprivations voluntary and forced, through compulsion and direction cheerfully and willingly borne, and through unprecedented hours and intensity of toil, became totally harnessed to the service of total war". This is no abstract form of words. There was no individual of either sex of working age—and few of those beyond normal working age—whose work was not consciously sanctioned or directed as his or her most valuable contribution to the nation at war. After the most careful examination of all the facts in all countries, it is claimed for the British people that they were more fully deprived of their peace-time comforts and more fully mobilized for war than the people of any other country, not excluding Germany. All men up to the age of sixty-four years and all women up to the age of fifty-nine were mobilized. This meant that there was a huge transference from the home and from both voluntary and involuntary unemployment to industrial and war work of some kind. The number of men and women below the ages mentioned engaged in industrial employment or in the services increased from 18,500,000 in the middle of 1939 to 22,000,000 in the middle of 1944. (In this calculation two part-time workers count as one whole-time worker.) The forces, the whole-time Civil Defence and the women's auxiliary services claimed 550,000 in 1939 and 5,250,000 in 1944. The number of persons employed on munitions work rose from 1,150,000 in 1939 to 4,300,000 in 1944. In 1938 only 6% of the national income was devoted to "defence" expenditure; in 1939 the figure was about 14%; in the early summer of 1940 the nation's economy was still only about 20% mobilized for war; four years later, at the time of "D Day", 55% of a greatly increased national income was applied directly to the war effort. The national income was increased not only by the greater number of workers, but also by the longer hours that were worked. The average hours of work for men engaged in the production of munitions, for example, rose from 48 hours a week before the outbreak of war to 54 hours early in 1944. One result of intense work in the war-time factories and in the services was the disappearances of all luxuries. They were not to be had because they were simply not being made. Even the ordinary equipment of life was heavily curtailed and food suffered along with the rest. It may be useful to remind Australian readers of the average civilian consumption per head per week during 1943 of the following foodstuffs: butter, 2·34 ounces; fresh eggs, 1·45;

fresh meat, 22·18 ounces; bacon and ham, 5·78 ounces; fresh fish, 4·56 ounces; sugar, 20·00 ounces; fresh fruit, 12·06 ounces. The changes in 1944 and 1945 were only slight.

Since European history began, we are told, Britain, faced by the substantial populations and conscript land armies of the Continent, has found her greatest strategical problem in manpower. It is therefore not surprising that throughout the war years "manpower was the dominating shortage which conditioned the programme". There were times when shipping troubles seemed likely to cause exhaustion of certain materials, but in the end the human "bottleneck" was the only one which really determined the limits of output. At the same time nothing was ever urgently wanted which remained unmade as long as there was a man or woman to make it. With the import of raw materials cut by 50%, there was achieved the highest industrial output ever attained in the history of the country. Let us look at some of the things that were done. Of all the munitions used by the armed forces of the British Commonwealth and Empire (8,750,000 men in all) since the beginning of the war, no less an amount than 70% was produced in the United Kingdom itself. The rest came from the United States of America, Canada and the other nations of the Commonwealth. This aid from overseas incidentally was indispensable. In addition to what was produced for British forces and for those of the Commonwealth and Empire substantial supplies were made for and sent to allies—the United States forces in Britain, the U.S.S.R., China and others of the United Nations. The figures for some of the biggest items in output give a general picture. In a table are set out for purposes of comparison the annual production rate during the last quarter of 1939 and at the war peak. Since bare figures for increases are "too astronomical" to convey much, we shall content ourselves by setting out the annual output of certain items at the war peak: machine guns, 104,800; sub-machine guns, 1,572,000; tanks, 8,600; tanks (weight in tons), 208,140; carriers and armoured cars, 24,400; shells, 59,400,000; small arms ammunition, 3,046,000,000; army wireless stations, 193,000; major war vessels, 346,000 tons; mosquito and other naval craft, 235,000 tons; naval guns, 20,970; aircraft, all kinds (structure weight in millions of pounds), 223; bombs, 458,000 tons; aero engines, 63,300; aero engines repaired, 45,400. Several special advances must be mentioned. Britain was the pioneer in radar and in jet propulsion. A British scientist discovered penicillin. A British engineer invented and designed the Bailey bridge—a bridge whose girders are built up of prefabricated panels which can be erected in various combinations to give varying strength. Britishers designed and built the Mulberry harbours, the prefabricated portable harbours which made the invasion of France possible. Appealing to the imagination, as much as anything perhaps, was "Pluto" (pipe line under the ocean), the system of pipes across the English Channel designed to meet the enormous demands for fuel oil by the invading armies after D Day. A book of no mean size might be written of steel production in Britain during the war. The handicaps in this, as in every other, industry were enormous. Steel of various kinds was needed and a great deal of laboratory research and experiment had to be carried out with alloys of different kinds, but this need be no more than mentioned. The iron and steel industry produced and handled during the war a grand total of no less than 86,000,000 tons of steel. Of this amount 14,000,000 tons were imported and the rest was manufactured at home. The industry mined and used 101,000,000 tons of iron ore and approximately 5,000,000 tons of scrap were obtained from three great scrap collections. During the period the statistics covering the relationship of demand against supply show that in 1941 deliveries met 92·6% of allocations, in 1942 96·1%, and in 1943, the highest consuming year, 100·8%; for 1944 the figure was 98·1%.

Reference must be made to food production in Britain. Before the war Britain produced only 40% of the food required to meet her needs; for the rest she relied on Canada, Australia, New Zealand and South America. At the end of the war she was able to meet 70% of her needs. From the amounts of food already quoted as comprising part of the ration it is clear that people had to be content with bare necessities and with a diet balanced on scientific standards with little regard for the preferences of the consumer. The United Kingdom is naturally a grass country. An acre of permanent grass, we are told, feeds only one or two persons; but when that acre is ploughed and sown with wheat it feeds twenty; planted with potatoes it feeds forty persons. The United Kingdom has altogether a total of 32,000,000 acres of arable land, given over to crops and grass. At the beginning of the war the land under cultivation had fallen as low as 13,000,000 acres. This was the lowest ploughed area ever recorded and was 2,000,000 acres less than the area under cultivation at the start of the war of 1914-1918. As early as May, 1939, the Minister of Agriculture offered to farmers a grant of two pounds an acre towards the cost of ploughing up permanent grass lands. Steps were also taken to increase the home manufacture of tractors and farm machinery. Between May and the outbreak of war in September, 350,000 acres of grass land had been ploughed and prepared for grain bearing. This presumably is the "flying start" that is credited to the Ministry of Agriculture and the farmers at the outbreak of war. The first thing that was done by the Minister when hostilities started was to set up war agricultural executive committees in the 61 counties of England and Wales. These committees acted as the local agents of the Minister; they had technical staffs to deal with technical problems and they dealt with other problems such as those of labour and machinery. They also had the great advantage of local knowledge. As a result of the work of these committees more than 7,000,000 acres of arable grass land have been put under cultivation and have yielded good crops. One of the chief concerns of the committees has been the increase of the milk supply. Attention has been drawn in these columns from time to time during the war to the excellent arrangements that were made to supply milk to women and children. We read that, though siege conditions no longer exist, dairy products, meat and eggs are scarce in the world, and Britain will for some years to come need all the home production that she can get.

One further group of facts remains to be mentioned. It has to do with mutual aid to allies. The estimated value of goods, services and capital facilities provided by His Majesty's Government in the United Kingdom to allies up to March 31, 1945, exceeded £1,400,000,000. This mutual aid was continued after that date without payment in furtherance of the principle that the resources of the

ANDREW'S PHARMACEUTICAL PREPARATIONS

BROMACLIMAN

for the therapy of menopausal disturbances and climacteric disorders. An excellent sedative and antispasmodic, which gives instant relief, acting not only on the heart and vascular system, but also on the central nervous system.

The following well-balanced and effective formula is a result of extensive and continuous specialisations over a long period:-

℞: Bromised Ovary/with 20% Brom.	gr.	3/4
Theobromine Alkaloid	„	3/4
Calcium Lactate	„	3
Benzyl Succinate	„	1/2

Obtainable at all leading chemists, issued in bottles of 50 tablets.

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexoestrol
Sodium Desoxycholate
Stibophen
Stilboestrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.,
D.D.T.

GOLD MEDAL, International Congress of Medicine, 1913

NOVOCAIN

Brand Ethocain
Hydrochloride.
THE ORIGINAL PREPARATION.
English Trade Mark No. 276477 (1905).
COCAINE-FREE Local Anæsthetic.

Throughout the war NOVOCAIN preparations have continued to be available in all forms, viz.:

Solutions in Ampoules, 1 oz. and 2 oz. Bottles, Stoppered or Rubber Capped. Tablets in various sizes and Powder.

Prices have been maintained at pre-war levels.

THE SAFEST AND MOST RELIABLE LOCAL ANÆSTHETIC.

Six to seven times less toxic than Cocaine.

Literature and Full Technique on Request.

Sold Under Agreement.

THE SACCHARIN CORPORATION, Limited
84 MALFORD GROVE, SNARESBROOK, LONDON, E.18
Telephone: WANSTEAD 3287
Australian Agents: J. L. Brown & Co.,
123 William Street, Melbourne, C.1.

Phone MW 2651-2 FOR STATIONERY

How are your supplies of stationery? Have you checked them over lately? Don't wait until the supply is exhausted before re-stocking—you know the inconvenience you will be put to. Look them over now, and if they're running low ring the PRINTING HOUSE for a quotation. Send a copy of the stationery you require and we will do the rest. Telephone number is MW 2651 - 2.

LETTERHEADS, RECEIPT BOOKS, ACCOUNT FORMS, PRESCRIPTION FORMS, CASE HISTORY CARDS, INDEX CARDS, ETC.

AUSTRALASIAN MEDICAL PUBLISHING COMPANY LTD., SEAMER ST., GLEBE, N.S.W.

SULPHAGUANIDINE

'B.W. & CO.'

Sulphanilylguanidine, a sulphanilamide derivative first prepared in the Burroughs Wellcome & Co. Laboratories. Specific in the treatment of bacillary dysentery of all types and in carrier cases; also effective in many cases of non-specific diarrhœa, and in neonatal gastro-enteritis. Successful results have been reported also in proctitis of lymphogranuloma inguinale, ulcerative colitis, regional ileitis and diverticulitis. The drug has been widely used as a prophylactic measure in surgery of the large intestine.

The product is available for oral administration as 'Tabloid' brand Sulphaguanidine, 0·5 gramme, in bottles of 100 and 500.

BURROUGHS WELLCOME & CO. (AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

ASSOCIATED HOUSES:
LONDON NEW YORK MONTREAL CAPE TOWN BOMBAY SHANGHAI BUENOS AIRES

United Nations should be pooled for the common war effort. The records are not complete. The following are the amounts of mutual aid to all countries on the basis of the latest recorded figures. (Except as otherwise stated, the figures are cumulative to June 30, 1944.) United States of America, £942,155,000 (up to March 31, 1945); U.S.S.R., £269,457,000; China, £9,050,000; France, £13,600,000 (up to June 30, 1943); Poland, £120,000,000 provisionally); Greece, £12,368,000; Czechoslovakia, £18,629,000; Portugal, £11,133,000; Turkey, £20,681,000. It is well also to remember that a great deal of this aid was given at the cost of many British lives and of an enormous amount of British equipment; these details possibly we shall never know.

In a small section at the end of the "record" reference is made to production in Australia, South Africa, Canada, New Zealand, India and the colonies. With this we do not propose to deal. Our object has been to emphasize Britain's vigour, her fortitude, her cohesion and her superb vitality. All the peoples of the Empire do well to ponder on the indubitable fact that had Britain not been as faithful and as valiant as she has always been, they would even now be captives of a foreign power and slaves of its bestial system. From this must arise some thought of Britain's present plight in the matter of food. Australia is among the well-favoured countries of the earth in her foodstuffs. She is doing something to help the Mother Country, but she could do more, and many of her citizens (most of them, we believe) would applaud any government action in this direction.

Current Comment.

MURMURS FROM TURBULENT FLOW.

The difference between turbulent flow and streamline flow in pipes has given the engineer and physicist some pretty problems demanding mathematical analysis of no mean order. This difference has not always been kept in mind in animal physiology; for example, in one very learned and deservedly commended textbook the formula for the flow of blood in arteries was that pertaining to turbulent motion which in ordinary circumstances does not exist. To the physiologist turbulence denotes loss of energy; to the clinician it is of commanding interest as the cause of murmurs. In the placid flow of blood in veins we should naturally expect a streamline character, and this is the rule except in special cases such as in the "*bruit de diable*" associated with the internal jugular. P. F. Hahn, W. D. Donald and R. C. Grier, junior, injected radioactive phosphorus, of course in phosphate form, into the splenic vein of the dog and found the tagged element mostly in the left side of the liver; when it was injected into the mesenteric veins radioactivity was mostly detectable in the right side of the liver; but if the jugular vein was the seat of injection, then equal distribution of the "tracer" phosphate was discovered throughout the whole hepatic substance.[1] Apparently the blood in the splenic vein and that in the superior mesenteric behave like the water in the Rhone and Arve below Geneva. That the blood flow in the aorta is streamlined was enunciated by Hess in 1917, who based his opinion on the absence of any murmer detectable by a sensitive stethoscope.[2] This was then subjected to experimental proof; a viscous solution of methylene blue was forced into the aorta by injecting it with excess pressure into a carotid. Had the aortic stream been turbulent, the dye would have been evenly distributed throughout the blood taken from a femoral artery; but it was not, being in fact confined to discrete filaments. Ralston and Taylor[1] have recently improved on Hess's technique by inserting a thin-walled glass tube, 2·6 cubic millimetres long and 0·2 cubic millimetre internal diameter, into certain arteries of the heparinized dog and cat, and then, taking a hint from a classic engineering research by Reynolds,[2] injected Indian ink into the descending aorta by a needle orientated in the direction of the movement of the stream or actually into the left ventricle itself. The results amply confirmed the work of Hess.

Theoretically the moving column of blood in a vessel may be considered, when turbulence is absent, as a number of hollow cylinders, not infinite, as is sometimes erroneously suggested, for if the blood vessel contains plasma only the minimum thickness of the wall of each cylinder will be the diameter of the globulin molecule, but when erythrocytes constitute half the mass of the blood the possible number of such hollow cylinders is still smaller. The layer of blood in contact with the vessel wall is to all intents and purposes static, whereas the axical velocity is the greatest. Hence a substance of equal viscosity, carefully injected, will present a parabolic front if the flow is non-turbulent. This phenomenon the investigations mentioned have disclosed.

There is little doubt that considerations of turbulent contrasted with laminar flow explain much detail in the form and arrangement of arteries; take, for example, the cosine law of arterial branching which tells us that when the branch is very small it will come off at a right angle from the parent trunk, but on the other hand the larger the branch, the more acute will the angle be. The great practical and clinical consideration is, as stated, that turbulence produces murmurs. Valvular aberrations in the heart are so well known that a mere mention will suffice. The Korotkov sounds heard during the estimation of human arterial blood pressure depend on turbulence arising from the armlet. Dilatation of the pulmonary artery close to the semilunar ring is a recognized source of functional murmurs. Apparently in some symmetrical aneurysms turbulence may be almost absent, but in others it is pronounced. When the systolic wave in the pulse is exceptionally high and steep, as in aortic regurgitation, it travels faster than the main pressure wave and "breaks", throwing the artery into violent perturbations causing turbulent flow. A last point is this: the whole hæmodynamic system is based on the transport of an aqueous fluid with a viscosity slightly above five times that of water. Should that viscosity be lowered in any way, for example, by diminution of the number of corpuscles or a reduction of the percentage of proteins, then turbulence in flow may easily arise and this the stethoscope will reveal.

TICK PARALYSIS.

That ticks feed on man as well as on animals is widely recognized; that man may, like animals, die from paralysis following such an event may not be so keenly appreciated. Yet this is so. An opportunity to bring the subject forward has arisen by the publication of a critical review of tick paralysis by J. B. Stanbury and J. H. Huyck, both medical officers of the United States Navy.[3] Australia is one of the countries favoured by the tick and the species that affects man in Australia is *Ixodes holocyclus*. A good deal of work on tick paralysis has been done in this country and some fatal cases of tick paralysis in man have been reported in this journal. In October, 1924, E. W. Ferguson reviewed a number of deaths following tick paralysis in human beings. In all of the cases but one paralysis was present; in some the legs were affected most and in several respiratory paralysis was the immediate cause of death. In the case in which paralysis was not present the early history was not available. The ages of the patients varied from thirteen months to thirteen years. In April, 1930, C. W. Sinclair reported a fatal case in a child, aged three and a half years, in which paralysis was widespread involving even the *sphincter ani* and the muscles of deglutition. In the issue of June 1, 1940, D. G. Hamilton reviewed six cases that had occurred at the Royal Alexandra Hospital for Children; two of the six were fatal. Hamilton's paper will be found to be a useful statement on the condition.

---

[1] *American Journal of Physiology*, Volume CXLIII, 1945, page 105.

[2] *Pflüger's Archiv*, Volume CLXVIII, 1917, page 439.

[1] *American Journal of Physiology*, Volume CXLIV, 1945, page 706.

[2] *Philosophical Transactions of the Royal Society* (London), Volume CLXXIV, 1883, page 935.

[3] *Medicine*, September, 1945.

Stanbury and Huyck give a good clinical picture of the ailment. The patient, usually a young female whose hair conceals a tick, is perfectly well before retiring on the evening prior to the onset of symptoms, but notices on rising the following morning that her legs are weak. Locomotion is possible at this stage, and temporary recovery or progression of the disease may occur from this point. When power or locomotion is lost, there is a rapid progression of ascending paralysis during the next twenty-four to forty-eight hours to a point at which the patient is unable to move either arms or legs and lies quite helpless. Sphincter function may or may not be retained. Except for possible apprehension the patient appears quite well. Vertigo or numbness and paræsthesia of the extremities may be present. The temperature rarely exceeds 100° F. until the terminal stage. Vomiting occurs occasionally and the patient may complain of stiffness of the extremities, restlessness, fatigue, aching legs and photophobia. Respiratory distress may begin quite suddenly and unexpectedly; when it does it usually leads to a fatal termination. Death may be preceded by convulsions. The mechanism of death is by respiratory paralysis. Typically, ascending paralysis with bulbar involvement is followed by death unless the tick is found and removed. Stanbury and Huyck have found no report of a case in which the patient recovered and the tick was found after recovery. If the tick is removed, considerable improvement occurs as a rule within a few hours. In America, unless the tick was found when the patient was *in extremis*, recovery has been invariable. Stanbury and Huyck point out that the disease as it occurs in Australia is different from the North American disease in several respects: the patients appear to be more acutely ill; the height of the disease is not reached until forty-eight hours after the tick has been recovered; *Ixodes holocyclus* is always the offending tick; recovery may require weeks; bizarre signs and symptoms are commoner. Stanbury and Huyck are at a loss to explain the differences shown by the condition in the two countries. They remark that in a few clinical reports symptoms are found to persist to such a degree as to suggest that the cases might be bacterial or viral in nature. They make no suggestion regarding the possibility that the differences may be due to a difference in the kind of tick concerned or in its habits and so on. That this is possible is shown by work carried out some years ago by I. Clunies Ross at the F. D. McMaster Animal Health Laboratory, Sydney, and reported by him in outline in 1935.[1] In view of the fact that the salivary glands of the tick undergo great enlargement during the final stages of engorgement, Ross tried to determine whether the toxic principle was present in the salivary secretion. He dissected numbers of five-day ticks which had gorged on dogs and he emulsified the salivary glands. He found that it was possible to obtain a solution which, if injected into white mice, would regularly produce fatal results and characteristic symptoms of tick paralysis. He found also that it was possible to determine the mouse minimum lethal dose of the pooled salivary emulsion as the equivalent of two and a half to three glands. Ross then tried to determine whether the fact that paralysis did not occur before the fifth day was due to quantitative forces or to some qualitative change which occurs in the secretion during the later stages of engorgement. Large numbers of three-day and four-day ticks were dissected and it was found that by increasing sufficiently the number of glands injected, fatal results could be obtained with salivary emulsion of ticks of both ages. Ross concluded, therefore, that the onset of paralysis was determined by quantitative rather than qualitative factors.

Stanbury and Huyck contrast the complexity of the ætiology of tick paralysis with the simplicity of treatment which for the most part consists in the removal of the tick, that is, if the tick is discovered before the condition has become far advanced. It is this fact which has led investigators to regard the disease as caused by a toxic agent formed in the tick and injected into the host. Stanbury and Huyck state that this is the most ready explanation. This toxin, in their opinion, might be formed within the tick ova and be diffused into the salivary glands, it might be found within the salivary glands, or it might be formed elsewhere and be activated by the salivary glands. Which of these possibilities is correct remains to be proved. In the meantime it is safe to conclude that a specific bacterial, viral or rickettsial agent is not responsible. The treatment and prophylaxis of tick paralysis must be left for consideration on another occasion.

JEAN-PAUL MARAT: VISIONARY OR VILLAIN?

On May 24, 1743, was born at Boudry, Neuchâtel, one Jean-Paul Marat, who was destined to become one of the ornaments of the medical profession. Whether the ornament bears more resemblance to a horrifying gargoyle or to some object of beauty like the Winged Victory seems to depend entirely upon the point of view of the historian. Marat's biographer in "The Encyclopædia Britannica" inclines to the latter view,[1] while C. MacLaurin, in a short study, firmly holds to the former.[2] "Cross benches" is held by H. P. Bayon in a lecture delivered before the Section of the History of Medicine of the Royal Society of Medicine in November, 1944.[3] Bayon has concentrated particularly on the medical aspects of Marat's career. There seems to be fair agreement among biographers about events in Marat's early life, although differences in detail appear. Jean-Paul was the son of Giovanni Mara, a native of Sardinia and an artist or designer and teacher of languages, and of his wife Louise Cabrol, of Geneva, the daughter of a wig-maker. In 1759, at the age of sixteen years, Marat left home and went to Bordeaux; according to "The Encyclopædia Britannica" this was on the death of his mother, and he went to Bordeaux and studied medicine for two years; Bayon states that Marat went to Bordeaux and became tutor to a family there; MacLaurin agrees that he studied medicine. Marat went to London in about 1766, and it was there, in 1773, that his best known work appeared; this was a "Philosophical Essay on Man", but Bayon refers to it as "An Essay on the Human Soul", and puts the date of its publication as 1772. In this essay Marat attacked the teaching of Helvetius that a knowledge of science was unnecessary for a philosopher. He declared that physiology alone could solve the problems of the connexion between the soul and the body. He suggested that the nerves carried two fluids, one sensory and the other motor, and stated that when a nerve was tied, sensation and motility ceased. He placed the soul in the meningeal membranes. Marat also suggested that hunger and thirst should be added to the five senses. Bayon states that Marat was a keen scientific experimenter during most of his life; he was interested in heat, light and electricity, and wrote works on those subjects. In 1775 Marat was in Edinburgh, where he received the degree of doctor of medicine of the University of Saint Andrews. Bayon reminds us that it was of this university that Dr. Samuel Johnson said that it had become wealthy by degrees. Back in Paris in 1777, Marat achieved considerable fame by his treatment of Madame de Laubespine, who was suffering from phthisis; she apparently recovered, and was alive four years later. Bayon thinks that the patient may have had one of the unexplained remissions that characterize pulmonary tuberculosis, and that Marat's expectant treatment (he did not use antimony, bleeding or other fashionable remedies) gave the *vis medicatrix naturæ* a chance to improve her health. Comparison of Marat's prescriptions with those of other physicians of his time show him to have been a "simplicist"—he relied on simple substances in treatment. Whatever the reason for his success in the case of Madame de Laubespine, it was the cause of his being appointed by the Comte d'Artois (later Charles X of France) as physician to his guards. (Some commentators consider that in this appointment Marat was no more than a horse-leech.) This appointment ended in 1784.

---

[1] *The Journal of the Council for Scientific and Industrial Research*, February, 1935.

[1] "The Encyclopædia Britannica", Fourteenth Edition, Volume XIV, page 855.

[2] C. MacLaurin: "Post Mortem: Essays, Historical and Medical", 1923.

[3] *Proceedings of the Royal Society of Medicine*, November, 1945, page 39.

In the years before Marat finally abandoned the practice of medicine and the pursuit of science for a political career, he wrote a number of essays on medical subjects. Bayon also refers to an incident which he says is denied by the majority of Marat's biographers—a theft from the Ashmolean Museum, Oxford, followed by an enforced sojourn in the hulks at Woolwich. In 1783 appeared his last medical writing—*"Mémoire sur l'électricité médicale"*. Bayon considers this his best piece of work; it is chiefly concerned with contesting the effects of electricity on different diseases. Several of Marat's "tracts" are in the nature of case reports, and if they make no great contribution to the pathology and treatment of the conditions discussed, they at least suggest that he may have obtained good results by scrupulous care. Two incidents are of interest from the point of view of Marat's later activities. In a letter to a Mr. William Daly, of which the date is unknown, Marat stated that his heart was "as tender as yours" (the subject under discussion being the anatomical observation of animals). In another letter Marat declined to perform an autopsy, for the reason that his feelings would not allow him *"d'assister à l'ouverture du corps d'un ami"*. All this is very quaint, in view of the unenviable reputation which Marat later earned for himself during the Reign of Terror as a citizen with an insatiable thirst for blood; "his most glorious vision", according to MacLaurin, "was only of killing 300,000 daily", but he never succeeded in reaching this total.

With the outbreak of the French Revolution in 1789, Marat's political career began. His biographer in "The Encylopædia Britannica" paints of him what must be an idealized portrait; he describes Marat as always standing alone, suspecting anyone who was in power, yet always meaning what he said, and constantly crying *"Nous sommes trahis!"* We gain the impression, through all the violence and vehemence of what Marat published in his paper, *L'Ami du peuple*, and of his own actions, that his was an unselfish interest in the future welfare of the people. This, however, is not the opinion of MacLaurin:

> His policy was simple, and touched the great heart of the people. "Whatsoever things were pure, whatsoever things were of good repute, whatsoever things were honest"—so be it that they were not Jean Paul Marat's, those things he vilified . . . . By his violent attacks on every one he made Paris too hot to hold him, and once again retired to London.

Back in Paris, Marat had to hide in cellars and sewers, and he himself said that it was here that he contracted the skin disease affecting the groin and scrotum from which he suffered for the rest of his life. All authorities agree that he could obtain relief from the intolerable itching only by sitting in a bath of hot water. Opinions differ as to the nature of the disease; the biographer of "The Encyclopædia Britannica" offers no suggestion; MacLaurin states that modern writers consider it likely to have been *dermatitis herpetiformis*, though Marat's political friends thought it the result of the humours generated by excessive patriotism in so small a body; Bayon, after careful thought, has come to the conclusion that the condition was chronic scabies. Whatever the disease may have been, it certainly caused Marat to spend most of his time in a hot slipper bath, and he was certainly in that situation when Charlotte Corday at last succeeded in gaining entrance to his room on July 13, 1793. MacLaurin gives an attractive description of this heroic young woman, determined to rid her country of what to her was a loathesome creature:

> Perhaps it would hardly be respectful to call her an "intense" young lady; but there was a young lady who sometimes used to consult me who might very well have sat for the portrait; she possessed a type of somewhat —dare I say?—priggish neurosis which I imagine was not unlike the type of character that dwelt within Charlotte Corday—extreme conscientiousness and self-righteousness. Such a face might have been the face of a Christian martyr going to the lions—if any Christian martyrs were ever thrown to the lions, which some doubt.

Having told Marat that a number of Girondins at Caen were plotting against the Revolution, Charlotte Corday heard him say: "Their heads shall fall within a fortnight." She thereupon plunged the long knife that she had brought with her into his right subclavicular space; it penetrated the space between the first and second right ribs, transfixed the lung, went through the aorta and entered the left auricle. Bayon calls attention to the fact that *post mortem* the whole surface of the right lung was found adherent to the pleura, so that at some time Marat must have suffered from pleurisy. Charlotte Corday, as everyone remembers, paid for her deed with her life.

This brief and inadequate account of Marat's career will serve as a further example of how the judgement of posterity may be swayed by the human element in historians. According to MacLaurin, Marat was a villain of the deepest dye, a human being who was little better than a beast, possessor of an "ill-balanced mind". Marat's biographer in "The Encyclopædia Britannica" takes of him, if we are to judge by historical facts, rather too sympathetic a view. (And yet, what are "historical facts" at a distance of a century and a half?) Bayon's carefully documented and reasonable study seems likely to be nearer the truth. He holds that those who believe that Marat was a madman are considering only the last three or four years of his life, "when many of his utterances were those of a homicidal maniac". No insanity was obvious in any of his close relatives—father, mother, brothers and sisters.

> It is true that Marat fulfilled one of the conditions for certification; he was a danger to his surroundings, for he could inflame the base passions of the populace so that they resorted to bloodshed and plunder. But it should not be forgotten that until he became cognizant of his power of swaying the mob, he behaved sanely, if somewhat morbidly.
>
> His egotism was not greater than that noticeable in the autobiographies of Benvenuto Cellini or Giacomo Casanova . . . . His "delusions of persecution"—as Burr calls them—though exaggerated, were not figments of the imagination . . . .

With regard to Marat's medical career, Bayon concludes that not in his methods, outlook or recorded writings can he be considered a "quack"; Dr. Marat's medical practice "seems to have followed orthodox paths".

THE MEDICAL ANNUAL.

"THE MEDICAL ANNUAL" for 1945 is sure to be welcomed by practitioners.[1] It is the sixty-third consecutive volume of a series and bears, like its predecessors, the appropriate title of "A Year Book of Treatment and Practitioner's Index". In previous years we have referred to "The Medical Annual habit"—once the book becomes known to a practitioner he acquires the habit of turning to it for information and the habit sticks. Among the more useful articles in this volume may be mentioned those on scrub typhus, stilbœstrol in cancer, tropical eosinophilia, the use of sulphonamides in dermatology and infective hepatitis. There is a good review of penicillin and its uses and the section on tuberculosis is worthy of attention. A contribution on vital statistics is an innovation and calls attention to an important branch of study.

---

[1] "The Medical Annual: A Year Book of Treatment and Practitioner's Index", edited by Sir Henry Tidy, K.B.E., M.A., M.D. (Oxon.), F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc., F.R.C.S.; 1945—sixty-third year. Bristol: John Wright and Sons Limited. 8¾" × 5½", pp. 422. Price: 25s. net.

Abstracts from Medical Literature.

THERAPEUTICS.

Penicillin.

C. S. KEEPER (*The American Journal of the Medical Sciences*, August, 1945) discusses the uses of penicillin. The average doses required in gonorrhœa are 50,000 to 150,000 units. These will effect a cure in 98% of cases in twenty-four hours. Hæmolytic *Staphylococcus aureus* requires 100,000 to 200,000 units daily for one to three weeks or more. *Streptococcus viridans* endocarditis needs at least 300,000 units daily for two to three weeks. Bacteriæmia due to *Staphylococcus aureus*, *Streptococcus hæmolyticus* or pneumococcus requires 120,000 to 240,000 units a day. The results are best in early cases in young people, less favourable in fulminating or prolonged infections and in elderly persons. Meningococcus meningitis is best treated with sulphadiazine. If no response occurs in twenty-four to forty-eight hours with sulphonamides, penicillin given both systemically and intrathecally is advised. Pneumococcal, staphylococcal and hæmolytic streptococcal meningitis is best treated with penicillin. Foci of infection such as mastoiditis should be drained surgically at the same time. In pneumococcal meningitis combined sulphadiazine and penicillin may be preferred. *Otitis media* and mastoiditis respond well to penicillin, as does tonsillitis due to *Streptococcus hæmolyticus*. Continuation of treatment for five to seven days is advised. For pneumococcal pneumonia penicillin is advised when response to sulphadiazine is unsatisfactory or when dangerous or worrying complications are present; 60,000 to 120,000 units a day intramuscularly may be required, and penicillin should be continued for two or three days after the fever has subsided. In acute osteomyelitis 120,000 to 250,000 units are given per day for two or three weeks until all clinical signs and symptoms have ceased. Gas gangrene requires surgical removal of necrotic and damaged tissue, antitoxin and penicillin in the usual doses for three to ten days. Treatment of syphilis is still in the experimental stage. Toxic reactions include fever, malaise, headache, increase of rash, painful swelling of the primary lesion or of the regional lymph nodes. These reactions do not contraindicate the continuance of treatment. Toxic reactions of penicillin in other disorders may take the form of urticaria at any stage; vesicular eruptions and thrombophlebitis may occur in intravenous therapy. A low fever may persist after clinical symptoms and signs have disappeared, and the fever subsides when penicillin is suspended. Abdominal cramps, diarrhœa, nausea and vomiting have been recorded. Actinomycosis, anthrax, yaws and rat bite fever due to *Streptobacillus moniliformis* have been said to respond to penicillin. Clinical diphtheria should not be treated with penicillin in preference to antitoxin, but penicillin may help in toxic cases. It is not effective for carriers. Chronic sinusitis, ear infections and nose and throat infections, as well as gingivitis and stomatitis due to Vincent's organisms, are not proved to respond to penicillin. In prophylaxis the value of penicillin is doubtful, though it has been said to diminish the incidence of empyema if given for one week before and after lobectomy and pneumonectomy.

U.F.I.

C. P. G. WAKELEY AND G. BLUM (*The Lancet*, July 14, 1945) describe the use of a new compound of urea and iodine, which they call U.F.I., in the treatment of septic wounds and burns. The compound consists of methylene diureide and dimethylene triureide with ionizable iodine and free urea in one crystalline salt, and it has a more potent antibacterial action than urea, than which it is no more toxic. It is active against *Bacillus proteus* and *Pseudomonas pyocyanea*. The addition of serum reduces its bacteriostatic action against most microbes, though not usually by as much as it reduces the bacteriostatic action of urea. The substance is applied locally as a powder and is painless on application.

Sulphadiazine.

J. G. REINHOLD, F. PHILLIPS AND H. F. FLIPPIN (*The American Journal of the Medical Sciences*, August, 1945) describe the results obtained by the oral administration of microcrystalline sulphadiazine (eshadiazine). It was found that when three grammes of this preparation were given there was a more rapid and higher concentration of sulphadiazine in the serum during the first six hours. Sucrose and flavouring agents did not affect the absorption. With a fasting stomach the rate of absorption was decreased, but still greater with microcrystalline than with ordinary sulphadiazine.

Inhalation of Penicillin Aerosol by Patients with Bronchial Asthma, Chronic Bronchitis, Bronchiectasis and Lung Abscess.

ALVAN L. BARACH *et alii* (*Annals of Internal Medicine*, April, 1945) aerosolized penicillin solution by the passage of five to eight litres of oxygen per minute through a nebulizer containing 1·0 millilitre of penicillin in concentrations between 20,000 and 100,000 units per millilitre. The predominating organisms found in the sputum culture were consistently absent twenty-four hours after discontinuance of treatment. The blood level of penicillin for one hour following inhalation of the aerosol was generally between 0·01 unit in 1·0 millilitre and 0·18. The aim of treatment, however, was not a high blood level, but a local application of penicillin on the bronchial wall. The twenty patients treated suffered from (*a*) varying combinations of bronchial asthma, bronchiectasis and pulmonary emphysema, (*b*) bronchiectasis with or without chronic lung abscess, (c) pulmonary fibrosis and emphysema, and (*d*) acute lung abscess. In five cases the improvement was marked, and seemed to be due to the inhalation of penicillin aerosol. In ten others improvement was moderate, and in the remaining five cases no significant clinical benefit was achieved. Of the fifteen patients whose condition was improved, seven suffered a recurrence of symptoms in two months or less. Further studies on the effect of penicillin aerosol are indicated in (*a*) bronchial asthma with bronchial infection, (*b*) bronchiectasis and (*c*) acute lung abscess. The results of experiments with white rats, weighing from 150 to 200 grammes each, which were injected with 0·1 millilitre of a rat culture of hæmolytic streptococcus and then either kept as controls or treated with penicillin by intramuscular injection or inhalations of penicillin aerosol, are given. Of 31 control animals all died, the average length of life after injection of 0·1 millilitre of hæmolytic streptococcal culture being 27 hours; of 28 rats given penicillin by injection, only four died, and these animals lived an average time of 117 hours after infection. In the third group of 31 rats given penicillin by inhalation 19 died, living an average time of 53 hours after infection. It is evident, therefore, that penicillin given by inhalation may protect rats against systemic hæmolytic streptococcus infection, but that, owing to obvious loss during its administration, the protection is less effective than a comparable dose injected intramuscularly.

Poliomyelitis.

N. S. RANSOHOFF (*The Journal of the American Medical Association*, September 8, 1945) has described the use of curare in the treatment of four children suffering from acute poliomyelitis. Nuchal rigidity and severe back spasm, as well as pain, were relieved by the injection of 0·9 milligramme of curare per kilogram. The effects were immediate and lasting in the relief of spasm and pain. A second dose was given the next day to one patient, a child, aged thirteen years. The ages of the other children treated were between two and a half and ten years. The author recommends the use of curare, of which he used a preparation called "Intocostrin" (Squibb).

The Treatment of Subacute Bacterial Endocarditis with Penicillin.

J. E. PAULIN AND C. J. MCLOUGHLIN (*Annals of Internal Medicine*, April, 1945) treated with penicillin six patients suffering from subacute bacterial endocarditis with three apparent cures. All patients seem to require at least 4,000,000 units of penicillin; the condition of all appeared to be hopeless at the onset of treatment. The authors contrast these figures with the 1% of patients who recover spontaneously and the 4·5% to 15% of cures obtained with various combinations of sulphonamide drugs.

NEUROLOGY AND PSYCHIATRY.

Headache following Injuries to the Head.

A. P. FRIEDMAN AND H. H. MERRITT (*The Journal of Nervous and Mental Disease*, July, 1945) have examined 265 patients with acute head injury and have correlated their findings with the occurrence of headaches during the patient's stay in hospital and for periods varying from two to twelve months after the injury. The authors found a cerebro-spinal fluid pressure of less than 160 millimetres in 56% of their cases, a pressure between 150 and 200 millimetres in 22%, between 200 and 250 millimetres in 17%, and over 250 millimetres in 5% of cases. The cerebro-spinal fluid was clear in

65% and bloody in 33% of cases. A marked correlation was proved between cerebro-spinal fluid abnormalities and the duration of coma and amnesia following the injury. The incidence of headache in the immediate post-traumatic period did not occur in a significantly higher percentage of patients with increased pressure and bloody fluid. The authors conclude that headaches persisting for several months after injury cannot be related directly to the cerebral pathology of brain injury as indicated by cerebro-spinal fluid.

Organic Deterioration.

Hirain K. Johnson and Rudolf Larsener (*The Psychiatric Quarterly*, April, 1945) discuss the Worcester-Wells memory test in cases of organic deterioration. This test provides a variety of procedures for memory testing and is standardized for adult age groups; it thus allows for the fact that there is a normal loss of memory with increasing age. Of the symptoms displayed in the organic mental syndrome memory is the most amenable to exact testing. A number of elderly psychotics were found to possess normal memories, which fact, in the opinion of the authors, indicates that emotional and personality difficulties are paramount in the reaching of a decision whether a given individual can live outside an institution. In the application of the Worcester-Wells test a low score may indicate mental deficiency or melancholic retardation or other psychiatric conditions. Caution in the interpretation of results is thus called for; and only under proper test conditions with sustained and maximum attention can accurate results be obtained which may provide a rough quantitative index of the degree of mental impairment.

Neurotic Character Structure of the Alcoholic Personality.

Dominic A. Barbara (*The Psychiatric Quarterly*, July, 1945) considers the aspect of the alcoholic problem which is concerned with alcoholism as an underlying neurotic character structure. The recent literature of the subject is passed under review; and two cases are presented in detail and with full discussion. In the first case it is found that alcohol offers the only means of finding a temporary solution to the patient's emotional conflicts, and at the same time gives him a means of fulfilling his masochistic tendencies in punishing him for his weak and irresponsible make-up. The author concludes that this use of alcohol, which at first serves as a means of escape, builds up all the more conflict and anxiety; and finally a complete dependence on alcohol is established.

Psychodynamics in Criminal Behaviour.

Crime, according to David Abrahamsen (*The Journal of Nervous and Mental Disease*, July, 1945), is in a sense an artificial thing created by law. People act according to their inner strivings, and if these actions happen to be against the law they are regarded as criminal. Criminalistic tendencies are present in all human beings. There are differences in degree but not in type. Apparent gain is not always the real motive. A criminal act represents attempts of the personality to adapt itself to the prevailing situation. Thus, to a certain extent, each offender selects his own type of crime; and, generally, the crime chosen is typical of the person who commits it. Psychopathology realizes a need to suffer; and many crimes unconsciously motivated arise out of this need. This unresolved wish for punishment is expressed in all the faulty acts which the culprit performs after his actual crime. Murder sometimes represents disguised suicide. Certain offenders may be classified as psychosomatic. A psychosomatic disorder may arise from an inadequately solved conflict. In such a case one individual may respond with an antisocial act, while another will develop a peptic ulcer. Again palpable physical abnormality may cause crime. The writer thinks that if psychoanalysis could be utilized in a practical form—together with psychiatric social workers—it would be of inestimable value to those who need it. Not until this is realized can any far-sighted treatment be planned for criminal behaviour.

Psychogenesis in Delirium Tremens.

Ralph Resenberg (*The Psychiatric Quarterly*, April, 1945) takes up the position that the symptomatology of *delirium tremens* is not the direct toxic result of alcohol. His studies, two of which he quotes in detail, would seem to him to indicate that *delirium tremens* consists of three syndromes; and that these seem to represent acute, subacute and chronic schizophrenic episodes. The first syndrome is of such duration that the hallucinations disappear before the patient recovers from the toxic effect of alcohol. In the second type the psychotic episode outlasts the toxic effects of alcohol: the hallucination reveals its true schizophrenic character. The illness becomes chronic in its third manifestation. At first the characteristic visual hallucinations are experienced, but later these are replaced by those of more typical schizophrenic type, and in due course mental deterioration sets in.

An Evaluation of the "Shock" Therapies.

A. E. Bennett (*The Psychiatric Quarterly*, July, 1945), now that the initial enthusiasm has died down, seeks to make a critical evaluation of the well-known shock treatments in psychiatry. His figures show that patients suffering from *dementia præcox* treated with insulin were discharged from hospital at the rate of 79·5% as compared with 58·8% of untreated patients. Their stay in hospital was 3·8 months shorter than that of the untreated patients. A larger proportion of the insulin-treated patients turned to gainful employment. Metrazol ("Cardiazol") therapy has declined in popularity since electro-shock has proved in all ways more desirable. *Grand mal* seizures are essential for correct treatment. There is no dispute whatever as to the value of electric shock therapy in the affective psychoses. From 80% to 90% of patients recover. Good results can be expected in the presenile depressions. Generally speaking, patients with obsessive-compulsive states and those suffering from conversion hysteria do not respond well. Anxiety depression is a much more favourable condition. Finally the author discusses complications and hazards involved in the shock therapies.

Problems of the Senile and Arteriosclerotic Mental Patient.

Natham Beikenstein and Leonard Gold (*The Psychiatric Quarterly*, July, 1945) have studied one hundred consecutive senile dements and an equal number of patients suffering from psychosis with cerebral arteriosclerosis. Figures regarding age and longevity are quoted. The major percentage of persons of both groups died within months of entering a mental hospital. The onset of the senile psychosis tended to be more insidious than that associated with arteriosclerotic infections; accidents and psychic traumata were the main precipitatory factors in the former, stroke, fracture and surgical operations in the latter. Of the cerebral arteriosclerotic patients, 16% lived for an average period of two and a half years after their initial psychotic manifestations.

Prefrontal Lobotomy.

Walter Freeman and James W. Watts (*The American Journal of Psychiatry*, May, 1945) report on fifty patients suffering from schizophrenia whom they treated by prefrontal lobotomy from two to seven years previously. They discuss the indications and contraindications of this treatment, comment on the signs of recovery, and devote some space to a discussion of the *modus operandi* of the treatment. Although they claim that prefrontal lobotomy is a procedure of last resort, they do not believe that the operation should be deferred until the patient has become emotionally deteriorated. They freely admit that schizophrenia does not respond so readily as other types of illness, such as the convulsive and obsessive conditions. It is their belief, however, that even the chronic hospital schizophrenic can be made to live more happily after lobotomy; for such an operation appears to bleach the affect attached to the ego and to turn the patient's interest away from himself towards the outside world.

According to Josef A. Kindwall and David Cleveland (*The American Journal of Psychiatry*, May, 1945), prefrontal lobotomy is a drastic surgical attack upon human maladjustment. No patient is ever the same after such an operation. He is usually happier and more at ease. He is sometimes more productive than before. But generally speaking the underlying illness (schizophrenia) has been arrested and not eradicated. This report covers fifteen patients upon whom the operation was first performed in April, 1942, when they all seemed to possess a hopeless prognosis. All but four had previously received shock treatment. These authors list the surgical dangers of treatment as follows: (i) immediate or delayed hæmorrhage, (ii) visceral and thermo-regulatory disturbance, (iii) occurrence of post-operative pneumonia, especially in the aged, (iv) inhalation of unswallowed food, (v) possibly an infection. All patients showed varying degrees of improvement; one is gainfully employed and five others are living at home.

British Medical Association News.

SOUTH AUSTRALIAN BRANCH NEWS.

Shortage of Hospital Accommodation in South Australia.

For some time past the Council of the South Australian Branch of the British Medical Association has felt considerable anxiety over the shortage of staffs for private hospitals, and in 1942, when the position had steadily become worse, the Council felt that unless immediate steps were taken to relieve it, very serious consequences would result to the civil population, more particularly to expectant mothers, many of whom were the wives of men serving with the armed forces.

The Council viewed with alarm the probable closing down of private hospitals, and, unfortunately, the fears expressed were well founded, as several have had to close down, causing considerable anxiety to those who had arranged accommodation in maternity cases, and to doctors who were consequently unable to get patients into hospitals for surgical and other treatment.

The manpower authorities were also approached regarding the extreme urgency of the need of securing female hospital employees.

On January 23, 1944, the Council wrote to the Chief Secretary of South Australia, drawing attention to the unsatisfactory position existing, and made constructive suggestions for his consideration. Although appreciative of the situation and anxious to help in the matter, the Chief Secretary replied that there were certain aspects beyond the control of the Government which prevented any additional assistance being given.

During 1945 a conference was held between the Council and matrons of principal private hospitals in the metropolitan area with a view to obtaining their opinions as to the best means of improving matters.

Following the eighth interim report of the Parliamentary Joint Committee on Social Security in which the regionalization of hospitals was recommended, the Council called a conference with representatives of the Municipal and Metropolitan Councils Association to put before them a plan for regionalization of hospitals to be financed by a hospital rate on the ratepayers in each district. The Chief Secretary, the Honourable A. L. McEwin, accepted an invitation to attend the meeting, and after a broad discussion on the subject, Mr. McEwin gave a *résumé* of the various schemes proposed by the Government, and informed the meeting that the amount of money involved in carrying out these schemes represented over £1,000,000. He said that all of the proposals mentioned were urgent, in view of the absence of any priority for building hospitals during the war, as was demonstrated by the time occupied in completing the new operating block at the Royal Adelaide Hospital. It was necessary, he said, that practical evidence by way of realization should be effective before any further commitments would be accepted seriously by the public. Other hospitals had sought his support to erect buildings which the Commonwealth Government had not seen fit to approve, and the Commonwealth Government was now apparently intent on making State governments responsible in this direction.

He mentioned that the position relating to manpower and material was still extremely difficult, and the latter was being further aggravated by industrial hold-ups in the eastern States, particularly in the coal and steel industry.

Mr. McEwin said that he could hold out no hope of a speedy termination of the present position, especially in view of the priority given to building houses, and in addition the present shortage of building materials created a position where there was no immediate possibility for the South Australian Government to make effective the entire plans mapped out. He could give an assurance, however, that the Government was serious in its endeavour to give the earliest practical effect to the proposals outlined earlier in his remarks. Whilst he was fully in sympathy with the principle of the district hospitals, he felt that nothing further could be done at the moment, and thought it would be at least two years before the present situation was in any way relieved.

At the request of Sir Henry Newland, Mr. McEwin stated that whilst he could not commit the Government, he could see no reason for not regarding the building of the hospital in the Western District, which has been approved by the Government, as part of a plan for regionalization of hospitals. Personally, he was in favour of this hospital as included in the general plan of regionalization.

The Council feels that the situation as regards obstetrics is now well nigh impossible. It is necessary for pregnant women to book their beds as soon as they become pregnant, and in many instances the only hospitals which take midwifery cases are already fully booked right to nine months ahead. The problem is now so bad that doctors tell their patients that they themselves must arrange for hospital accommodation.

From the above information it will be seen that the Council of the South Australian Branch of the British Medical Association has been in the past fully alive to the growing seriousness of the situation, and has done everything in its power to alter a position which has now developed into a very dangerous state.

NOTICE.

The General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioner has been released from full-time duty with His Majesty's Forces and has resumed civil practice as from the date mentioned:

> Dr. K. W. Starr, O.B.E., 185, Macquarie Street, Sydney (February 20, 1946).

The Librarian of the Victorian Branch of the British Medical Association would be glad to learn of any reader of this journal who could spare a copy of the August, 1941, issue of *The Journal of Pediatrics.* This issue was never received at the library, and the publishers have informed the Librarian that it is out of print. Anyone who is able to comply with this request should communicate with the Librarian at Medical Society Hall, 426, Albert Street, East Melbourne, C.2, Victoria.

◆

Special Correspondence.

NEW ZEALAND LETTER.

By Our Special Correspondent.

A Post-Graduate Chair in Obstetrics and Gynæcology.

The establishment of a post-graduate chair in obstetrics and gynæcology, originally mooted by the New Zealand Obstetric and Gynæcological Society (under the ægis of the New Zealand Branch of the British Medical Association) in 1940, was carried a step further this week when the Senate of the University of New Zealand, meeting in Auckland, authorized the chair to be established at Auckland University College. A committee of Auckland business men have collected £55,000 (£100,000 is the objective) to endow the chair, which will be the first post-graduate chair in New Zealand. It is possible it may have some under-graduate teaching duties as well.

A strong advisory committee is to be set up to support the Council of Auckland University College and act as a liaison between it and the Faculty of Medicine at Otago University in Dunedin.

The project promises to make a move toward greater self-reliance on the part of the Dominion in the matter of post-graduate training, and is a necessary adjunct to maternity benefits under social security. Without it, there would be no visible means of raising standards of practice in that branch.

British Medical Association Branch Conference.

The first New Zealand Branch Conference to be held since 1939 was held in Auckland from February 12 to 15, 1946, under the Presidency of Mr. Eisdell Moore, F.R.C.S., of Auckland. Brilliant summer weather prevailed throughout, rendering fluid loss during the meetings excessive. Happily the balance was restored by an enjoyable series of social functions, including a civic reception by the Mayor, a musical evening, a garden party, a dinner and a ball.

The official visitor was Sir Stanton Hicks, of Adelaide, Professor of Physiology, and he led several discussions on subjects which included nutrition, penicillin and endocrinology. Full sectional meetings were also arranged covering a wide range of subjects from amputations to thyreotoxicosis and thiourea.

Generous time was set aside for the discussion of the medico-political situation by the full conference, and the Council remained in nigh perpetual session throughout. The Minister of Health, the Honourable A. H. Nordmeyer, had given an address at the civic reception, in which he traversed the situation in a clear and friendly manner, indicating the Government's inclination towards a salaried service, but without compulsion of either doctor or patient. He hoped the British Medical Association would agree to bury the "refund" system in favour of the now largely used "fee for service" system.

Long periods were given to the discussion of the future of medical practice in New Zealand, and a shorter one to group practice. No decisions were promulgated, this being the function of the Council. Very free expression of opinion took place, and a reasonableness of spirit amongst the diverse views was apparent. There was also a naturally greater realism in the general attitude in view of post-war conditions, returning service men, and the unsatisfactory state of contemporary practice. Decisions of Council go back to Divisions before final adoption.

Medical Practice.

MEDICAL PRACTITIONERS AND EVIDENCE AT INQUESTS.

The following letter is published at the request of the Medical Secretary of the Victorian Branch of the British Medical Association.

[copy.]

The Medical Secretary,
British Medical Association,
Albert Street,
East Melbourne.

Dear Sir,

At a recent meeting of the Council of the Medical Defence Association of Victoria a matter was brought up for consideration as to whether a medical man could be compelled to give evidence at an inquest.

The matter arose in this way: A baby was born in a country town and its body was found dead and partly burned in the incinerator of an hotel. A young woman who was residing at the hotel was questioned by the police, and on her denial that she had given birth to a baby, she was examined by a medical man, whose examination showed that she had quite recently given birth to a baby, but the medical man, at the request of the young woman, refused to give any information to the police as to the result of his examination.

The medical man concerned sought the advice of my Association as to whether he could be compelled to give evidence at the inquest on the baby's body, and on the matter being referred to the solicitor for the Association, he gave a considered opinion that the medical man could be compelled by the coroner to give evidence, but advised that he should plead privilege.

At the inquest held before a police magistrate the young woman was represented by a solicitor and the Crown was represented by a legal officer of the Crown Law Department, who, on the medical man claiming privilege, immediately produced authority to the effect that a claim of privilege by a medical man could not be maintained before a coroner.

The coroner thereupon refused to allow the claim of privilege and ordered the medical man to give evidence, which he did.

My Council directed that notification of this matter should be sent to the British Medical Association for the information of members.

Yours faithfully,
F. R. Priestly.

Medical Defence Association of Victoria,
Kelvin Hall,
55, Collins, Street,
Melbourne.
January 29, 1946.

Correspondence.

THE SPELLING OF WORDS.

Sir: Many of the words used in medical parlance are descriptive and etymologically accurate. There is no reason for misspelling such words. I refer in particular to the word hydrocele. Many junior members of the profession and even the record room of one large Sydney hospital now spell this as hydrocoele. The Greek kēlē means a tumour, koilos means a hollow.

Yours, etc.,
David Monk Adams.

Sydney Hospital,
Macquarie Street,
Sydney.
February 9, 1946.

WOUNDS CAUSED BY SMALL FISH.

Sir: Recently I attended some cases of wounds of the foot caused by treading on small fish, presumably bullrouts, one being of some interest.

A lad, aged fourteen, trod upon a bullrout three hours before, and immediately suffered severe pain. In the three hours the pain rose to a climax and then subsided to a dull throb which did not worry the patient. There was some soreness in the groin. On examination, there were two puncture wounds in the middle of the ball of the left foot, one three-sixteenths of an inch long and the other one-sixteenth of an inch in diameter. There was no bleeding or inflammation, but the whole foot was swollen with pitting œdema extending into the ankle region. The left inguinal lymph glands were enlarged and tender. As the pain had subsided, no injection of local anæsthetic was given, and treatment consisted of local cleansing with a mercurochrome 1% dressing, postural rest, a short course of sulphadiazine and 1,000 units of anti-tetanus serum, as he had walked home barefooted. Recovery was uneventful over twenty-four hours.

Other cases indicated that the duration of troublesome pain is from two and a half to three hours, so any results of the alleviation of pain by various methods should be examined with this fact in mind. An interesting feature was the early involvement of the inguinal lymph glands such a distance from the lesion.

Yours, etc.,
Keith F. D. Sweetman.

c.o. 57, New South Head Road,
Vaucluse,
New South Wales.
February 10, 1946.

THE TREATMENT OF INGUINAL HERNIA.

Sir: In an article on inguinal hernia in your issue of February 9, 1946, Dr. Franklyn V. Stonham indicates that he practises the Hamilton Russell operation in favourable cases. At the present moment the Launceston General Hospital is conducting an inquiry into the sites of recurrence after various kinds of primary operations. If any of Dr. Stonham's cases have recurred we would be most grateful if he would state the exact site or sites of the recurrences. It has been our experience at this hospital, where the Hamilton Russell operation has been standard since 1926, that there is only one kind of recurrence which follows it and that is one which is at the site of the original sac. It may be said here that our inquiry has been greatly hampered by the fact that many surgeons reporting series of recurrences have failed to differentiate between recurrences at the site of direct and of indirect herniæ. The importance of this differentiation becomes plain when it is realized that adherents of the Hamilton Russell procedure claim that recurrences at the site of direct herniæ are not true recurrences at all, but are new and separate herniæ created by the operation performed to cure the first one. They claim, for instance, that if the recurrence rate after the Hamilton Russell operation is, say, x%, the recurrence rate after plastic operation such as Bassini's is x% + y%, where "x" represents the percentage of indirect recurrences and "y" the percentage of direct "recurrences".

It is very refreshing to see that Dr. Stonham gives Hamilton Russell his proper place in the field of hernia surgery. Articles have appeared recently which purport to give a history of the hernia operations and Hamilton Russell's name has not been mentioned at all. Students of the literature will perhaps say that there are only two outstanding figures in the history of the surgery of hernia—one, Bassini, and the other Hamilton Russell. Curiously enough, Hamilton Russell spent a great part of his life in condemning the Bassini operation. Those of us who are his disciples will agree with him, but nevertheless one wonders whether Hamilton Russell was really fair to Bassini. In the first place it must be realized that Bassini not only described the method of suturing the conjoined tendon *et cetera* to Poupart's ligament, but, what is of much greater importance, that he was one of the first to advocate boldly opening the external oblique and completely removing the sac. In the second place, it must be remembered that whereas Hamilton Russell was a surgeon to a children's hospital and so was operating only on easy cases, Bassini was operating on adults at a time when cases did not present themselves until the herniæ had become huge. It is very probable, if a modern surgeon were handling the 262 cases reported by Bassini, that in the majority of them he would perform an extensive plastic repair. It is quite probable also that in Bassini's own hands his own operation was as good a plastic procedure as any which has been devised since. It must be pointed out, however, that we live in very different surgical times from those of Bassini, and that the majority of hernia cases now present themselves at a stage of development when it should be possible to deal with them by relatively simple procedures. What Hamilton Russell really objected to was not that Bassini should have developed a particular operation to meet a particular state of affairs, but that an operation designed to close an opening that occupied most of the canal should be applied with all its accompanying risks to the closing of an opening occupying only a small part of the canal.

Yours, etc.,
C. CRAIG, M.D., M.S., F.R.A.C.S.,
Surgeon-Superintendent.

General Hospital,
Launceston,
February 13, 1946.

THE INTERVERTEBRAL DISK.

SIR: I regret that Dr. Marion Radcliffe-Taylor has been caused the confusion which is apt to occur with partial reading and quotation.

There is no contradiction between 1: "No one can doubt the good effects of conservative surgery on the intractable sciatica due to mechanical pressure from a disk fragment or protrusion, where localization can be accurate", and 2: "Localization by observation of pain, numbness, and objective signs referred to a dermatome might be deceptive; the lesion might not be on the vertebral level at which one expected to find it, as there could be an associated prefixation or post-fixation of the plexus. It was, however, a simple enough matter to make an interlaminar exploration of two spaces if desired."

The first quotation is merely a general statement which the second amplifies.

Yours, etc.,
DOUGLAS MILLER.

Craignish,
185, Macquarie Street,
Sydney.
February 22, 1946.

"BEACH FOOT."

SIR: It has been stated that those who have never worn boots do not suffer from what is commonly known as "beach foot", "athlete's foot" *et cetera.*

Presuming that this was due to absence of moisture between the toes, and having been a sufferer myself from this fungous infection, I thought it worth while to concentrate on this desiccation effect, with resultant unsuitability of soil, rather than on direct fungicides. I had previously tried every kind of lotion, powder and remedy, proprietary and otherwise, some giving temporary relief or apparent cure, to be followed by relapse. All I did was to draw a strip of bandage wet with methylated spirit between the toes and applied to outlying areas, hoping for a slight depth of hygroscopic effect, followed by another strip wet with petrol for its very efficient surface drying about three times a day for a week, then once or twice a week for a month. This gave complete cure, and I have had no further trouble. I got two friends to try it and it cured both quickly. In one the trouble had been present only a few weeks and in a severe form, so here improvement through "the soil being eventually worked out" did not apply. I realize that the number of cases is too few for absolute certainty, but the remedy is so easily tried that I report it for what it is worth and would be glad of a personal line from anyone who tries it and finds it ineffective.

Possibly absolute alcohol would be more effective than methylated spirit, but the latter is more easily obtainable and served the purpose.

Also, can anyone tell me whether there is much antiseptic power in petrol? On account of its limpidity and absence of coagulation effect, I imagine it would be more penetrating in deep punctures from thorns, nails and splinters than most spirituous lotions, tincture of iodine *et cetera.* I have used it for years on myself for these injuries, cuts and so on, and have never had further trouble. Also it has the advantage of being painless.

Yours, etc.,
ERIC POCKLEY.

Avalon Beach,
New South Wales,
February 13, 1946.

AUSTRALIA AND SCIENCE: THE UNIVERSITY OF SYDNEY AND SCIENTISTS.

SIR: In referring to your leading article in the journal dated February 23, 1946, I am concerned mainly with one remark, whose substance, I believe, offers, in part at least, an explanation of some of the difficulties which beset our universities.

Too little attention is given by the community at large and by the appropriate authorities in particular to consideration of what a university is, or should be, and of what the function of a university is, or should be. As you say, it is quite simple to allow universities to degenerate to the level of technical schools—in fact, so simple that many universities, including that of Sydney, have already, by whittling away their birthright to education and culture for a mess of government pottage, sunk even lower, in so far as they (perhaps unconsciously) masquerade as universities when in reality they are little more than collections of vocational training schools.

But any suggestion which might be read into your article that a lecturer in, say, bacteriology or applied chemistry should be paid more than one in, say, Greek or philosophy, is not likely to do otherwise than aggravate the present position. I would reverse things, and for as long as, say, bacteriology or applied chemistry remains only a curriculum subject for professional schools or careers, pay the lecturers in such subjects less, not more, than the lecturers in, say, Greek or philosophy. In this way it may be possible at least to begin to put the emphasis on education and on learning as contrasted with merely technical training in vocational schools. Professional schools have no rightful place in a true university—and here let it be made clear that a department or school of chemistry, or zoology, or anatomy, or any other subject is not to be confused with a medical school wherein such subjects are in general taught just so much or so little as is arbitrarily agreed to be necessary for training medical practitioners. It is the intention and the goal which matter, not the subject studied. If the goal be knowledge for its own sake, then that discipline is permissible within a university; if the goal be merely professional efficiency, then it is not permissible. By all means let us study botany, Greek, physiology, mathematics *et cetera,* but not solely because a modicum of knowledge of one or more of these subjects has been pronounced a necessary part of a curriculum in veterinary science, medicine, engineering *et cetera.*

If, as President Hutchins, of the University of Chicago, says, the general educational system of a country is a true indication of the ideals of that country, then it is high time we took stock of both our ideals and our systems in Australia, remembering that our universities are closely bound up with those systems. Vocational training, even though undergone within a recognized university, cannot replace education; in the former the emphasis is continually on ability to engage successfully in some gainful occupation, whereas in the latter the intellectual is paramount and material gain is excluded as an objective, but not necessarily as a consequence.

A possible increase in the already excessive number of professional groups within the university makes it imperative to think and to act at once, if we hope or wish to avert the disappearance of education at the tertiary level.

Yours, etc.,
N. E. Goldsworthy.

Roseville,
New South Wales,
February 27, 1946.

Naval, Military and Air Force.

APPOINTMENTS.

The undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 34, of February 21, 1946.

Naval Forces of the Commonwealth.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Transfer to Retired List.—Surgeon Captain Leonard Darby, C.B.E., is transferred to the Retired List, dated 24th January, 1946.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Termination of Appointment.—The appointment of John Matthias Joseph Jens as Surgeon Lieutenant-Commander is terminated, dated 30th November, 1945.

Australian Military Forces.

Australian Army Medical Corps.

V145875 (now VX104315) Captain L. B. Witts is transferred from Australian Army Medical Corps (Medical), 3rd Military District, 30th April, 1942 (in lieu of the notification respecting this officer which appeared in Executive Minute No. 259 of 1943, promulgated in *Commonwealth Gazette*, No 184A, of 1943).

The name of TX2157 Lieutenant-Colonel B. M. Carruthers, O.B.E., is as now shown and not as it appeared in Executive Minute, No. 162, of 1945, promulgated in *Commonwealth Gazette*, No. 227A, of 1945.

3rd Military District.—The provisional appointment of V145875 Captain L. B. Witts is confirmed, and he is transferred to Australian Army Medical Corps (Medical), 30th April, 1942.

NX108462 Lieutenant-Colonel S. D. Meares relinquishes command of 7th Australian Field Ambulance and is appointed to command 103th Australian Convalescent Depot, 11th December, 1945.

NX102477 Lieutenant-Colonel K. A. McGarrity relinquishes command of 2nd/1st Australian Field Ambulance, 18th December, 1945.

SX2817 Lieutenant-Colonel (Temporary Colonel) H. M. Fisher relinquishes command of 2nd/6th Australian General Hospital and is placed upon the Regimental Supernumerary List, 11th December, 1945.

TX2142 Lieutenant-Colonel M. G. Edison relinquishes command of 109th Australian Casualty Clearing Station (Australian Imperial Force) and is placed upon the Regimental Supernumerary List, 11th December, 1945.

NX115447 Lieutenant-Colonel J. Davis relinquishes command of 103rd Australian Convalescent Depot and is placed upon the Regimental Supernumerary List, 11th December, 1945.

QX6083 Lieutenant-Colonel J. J. Ryan, M.C., relinquishes command of 11th Australian Field Ambulance and is placed upon the Regimental Supernumerary List, 11th December, 1945.

SX11527 Major (Temporary Lieutenant-Colonel) W. A. Russell relinquishes command of 8th Australian Field Ambulance (Australian Imperial Force) and is placed upon the Regimental Supernumerary List, 11th December, 1945.

VB127209 Local Major D. Sinclair ceases to be seconded for duty with the Chemical Defence Board as Deputy Chief Superintendent, Australian Field Experimental Station, relinquishes the rank of Local Major and ceases to be attached to the Australian Military Forces, 24th October, 1945.

The following officers are placed upon the Regimental Supernumerary List: Captains VX94813 P. E. Dane, 3rd December, 1945, and VX90842 F. A. L. Bacon, 12th December, 1945; XV48607 Major (Temporary Lieutenant-Colonel) T. C. Backhouse, and Lieutenant-Colonels QX6481 R. G. Quinn, NX34914 F. W. Niesche, SX2816 J. M. Bonnin, and WX1524 R. W. Johnson, 11th December, 1945, NX70154 L. S. Loewenthal, 14th December, 1945, SX2912 A. H. Lendon, 11th December, 1945, NX18 I. M. Mackerras and NX35025 E. F. Thomson, 14th December, 1945, and SX21585 T. A. B. Jones, SX14109 A. C. McEachern, XV14854 C. A. M. Renou, WX1525 N. H. Robinson, NX70331 N. R. Wyndham, SX1471 N. P. Wilson and VX315 L. G. Travers, 31st December, 1945.

V159887 Lieutenant-Colonel (Temporary Colonel) C. W. Ross relinquishes the rank of Temporary Colonel and is transferred to the Reserve of Officers (Australian Army Medical Corps) with the rank of Lieutenant-Colonel and is granted the rank of Honorary Colonel, 10th November, 1945.

VX39480 Lieutenant-Colonel (Temporary Colonel) E. T. T. Downie relinquishes the rank of Temporary Colonel and is transferred to the Reserve of Officers (Australian Army Medical Corps) with the rank of Lieutenant-Colonel and is granted the rank of Honorary Colonel, 13th December, 1945.

NX19 Lieutenant-Colonel K. B. Armstrong is transferred to the Reserve of Officers (Australian Army Medical Corps), 4th December, 1945.

To Be Lieutenant-Colonels.—Majors (Temporary Lieutenant-Colonels) NX19 K. B. Armstrong, NX70154 L. S. Loewenthal, QX6083 J. J. Ryan, M.C., and SX1471 N. P. Wilson, 27th September, 1945, and VX315 L. G. Travers, 22nd July, 1945.

No. 102 (Holland Park) Military Hospital.—NX171725 Captain W. S. Hemphill is placed upon the Regimental Supernumerary List, 9th October, 1945.

No. 105 (Adelaide) Military Hospital.—SX34386 Captain J. A. Lewis is transferred from Australian Army Medical Corps (Medical) Reinforcements with regimental seniority as from date of transfer, 24th November, 1945.

2nd/12th Australian Field Ambulance.—WX33063 Captain L. G. Redgrave is placed upon the Regimental Supernumerary List, 19th December, 1945.

Reserve Citizen Military Forces.

Australian Army Medical Corps.

New South Wales Lines of Communication Area.—The rank of Colonel A. H. Tebbutt, D.S.O., V.D., is as now shown and not as it appeared in Executive Minute, No. 77, of 1945, promulgated in *Commonwealth Gazette*, No. 124A, of 1945.

Reserve of Officers.

The undermentioned officers are transferred to the Reserve of Officers with effect from the dates shown and, where applicable, cease to be seconded on the date prior to such transfer:

VX114197 Major J. D. Hicks, 30th October, 1945.

No. 114 (Goulburn) Military Hospital.—QX6253 Major R. J. Hoy, 30th November, 1945.

15th Australian Field Ambulance (Australian Imperial Force).—SX15736 Captain L. S. Wallman, 9th November, 1945.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Gates, Bruce Fonyth, M.B., B.S., 1937 (Univ. Sydney), (NX169487, Captain), 2, Ozone Street, Cronulla.
McNeil, Angus, M.B., B.S., 1941 (Univ. Sydney), 44, Plowman Street, North Bondi.
Rowe, Denis Patrick, M.B., B.S., 1936 (Univ. Sydney), 8, Redan Street, Mosman.
Musso, Fedele John Andrew Leo, M.B., B.S., 1945 (Univ. Sydney), 409, Forest Road, Penshurst.
Watson, Charles Rolleston, M.B., B.S., 1942 (Univ. Sydney), 11A, Silex Road, Mosman.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Andersen, Neville Arthur, M.B., B.S., 1945 (Univ. Sydney), District Hospital, Marrickville.
Bracken, Derek Christopher Gordon, M.B., B.S., 1940 (Univ. Sydney), 81, Darling Point Road, Edgecliff.

Clifford, Kevin Patrick, M.B., 1940 (Univ. Sydney), 57, Belmore Road, Randwick.
Colman, Jack, M.B., B.S., 1943 (Univ. Sydney), 81, Preddy's Road, Bexley.
Doctor, Benno Basil, M.B., B.S., 1945 (Univ. Sydney), 740, New South Head Road, Rose Bay.
Duval, Ferdinand, M.B., B.S., 1937 (Univ. Sydney), D.M.R., 1944 (London), 135, Macquarie Street, Sydney.
Evans, Cyril Percival Victorious, M.B., B.S., 1943 (Univ. Sydney), 8, Andrew Street, West Ryde.
Fisher, Gerard Maxwell, M.B., B.S., 1942 (Univ. Sydney), (Captain), Broughton House, Thomas Street, Parramatta.
Harker, Andrew Jennings, M.B., B.S., 1939 (Univ. Sydney), 7, Rawson Street, Epping.
Hemphill, Woodrow Sanford, M.B., B.S., 1942 (Univ. Sydney), (Captain), 38, Elizabeth Street, Mayfield, Newcastle.

◆

Post-Graduate Work.

A FILM AFTERNOON AT SYDNEY.

The New South Wales Post-Graduate Committee in Medicine announces that arrangements have been made for the holding of a film afternoon at the Stawell Hall, 143, Macquarie Street, Sydney, on Wednesday, March 13, 1946, at 4.15 o'clock p.m., when the following medical films will be shown: "Beriberi", "Thiamin Chloride Deficiency". This film programme constitutes part of the annual general course conducted by the committee, and members of the allied and defence forces are cordially invited to attend.

◆

Corrigendum.

In the paper by E. R. Trethewie entitled "Anticoagulant Effect of Perfusing Organs: Liver, Kidney and Lung", published in the issue of September 15, 1945, an error has occurred in Table VI. In the heading of the third column the word "gramme" should read "milligrammes per mil".

◆

A MEMORIAL TO THE LATE PROFESSOR JAMES THOMAS WATSON.

An appeal is being made by the University of Sydney Medical Society for funds to establish a memorial to the late Professor James Thomas Wilson. The society suggests that the memorial be an annual prize in anatomy open to students in medicine. Contributions may be sent to Mr. I. J. Hunter at the Old Medical School; cheques should be made payable to the "Wilson Memorial Fund". Mr. W. A. Selle, Professor A. N. Burkitt and Mr. I. J. Hunter are trustees of the fund.

◆

Medical Appointments.

Dr. J. M. Dwyer has been appointed first medical officer and Dr. R. A. Isenstein second medical officer in the male section of the night clinic at the Royal Adelaide Hospital, Adelaide.

Dr. G. W. Barker, Dr. H. B. Gill, Dr. A. N. Kingsbury, Dr. D. M. McWhae and Dr. D. D. Paton have been appointed to the Medical Board of Western Australia under the provisions of the *Medical Act*, 1894-1945.

Dr. A. B. Lilley, Chairman of the Hospitals Commission of New South Wales, has been appointed a trustee of the King George V and Queen Mary Maternal and Infant Welfare Foundation.

Dr. A. H. Joyce and Dr. T. A'B. Travers have been appointed members of the Opticians Registration Board under section 4 (*b*) (iii) of the *Opticians Registration Act*, 1935, of Victoria.

Dr. J. W. Rollison has been appointed medical superintendent of the Royal Adelaide Hospital, Adelaide.

Diary for the Month.

MARCH 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
MARCH 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Ethics Committee.
MARCH 20.—Western Australian Branch, B.M.A.: General Meeting.
MARCH 21.—Victorian Branch, B.M.A.: Executive Meeting.
MARCH 21.—South Australian Branch, B.M.A.: Council Meeting.
MARCH 22.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 26.—New South Wales Branch, B.M.A.: Council Quarterly.
MARCH 27.—Victorian Branch, B.M.A.: Council Meeting.
MARCH 28.—New South Wales Branch, B.M.A.: Annual Meeting.
APRIL 2.—New South Wales Branch, B.M.A.: Council.
APRIL 3.—Western Australian Branch, B.M.A.: Council Meeting.
APRIL 3.—Victorian Branch, B.M.A.: Branch Meeting.
APRIL 4.—South Australian Branch, B.M.A.: Council Meeting.
APRIL 5.—Queensland Branch, B.M.A.: Branch Meeting.
APRIL 9.—Tasmanian Branch, B.M.A.: Ordinary Meeting.

◆

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

◆

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

RADIOLOGIST, PALMERSTON NORTH HOSPITAL, NEW ZEALAND.—Applications are invited for the post of full-time Radiologist at the Palmerston North Hospital (400 beds), New Zealand. The post is a full-time one with no right of private practice. A modern X-ray department with modern Westinghouse X-ray equipment is available. In addition to all types of diagnostic X-ray work, the radiologist will be required to carry out the work of the Radiotherapy Department. This department at present does superficial and intermediate X-ray therapy. Applicants must be fully qualified medical practitioners—a special training and experience in X-ray work is essential, and a special diploma in radiology is desirable. Applicants should give full details of age, sex, nationality, married state, qualifications, experience and training, with copies only of testimonials. The salary is £1,150 to £1,350 per annum according to qualifications and experience, with a living-out allowance of £150 per annum. Full details of this appointment are obtainable on application from the Manager, Australasian Medical Publishing Company, Limited, Seamer Street, Glebe, Sydney. Applications should be addressed by air mail to the Managing Secretary, Palmerston North Hospital Board, New Zealand, and close in New Zealand on 13th March, 1946.

EX-SERVICEMAN seeks casual position as doctor's chauffeur. Hours 6 p.m. to 12 p.m. Reference available. Apply No. 107, c.o. The Medical Journal of Australia, Seamer St., Glebe, Sydney, N.S.W.

CHILDREN'S HOSPITAL, CARLTON. — The Committee of Management invite applications, with testimonials, from legally qualified medical practitioners for the undermentioned new appointments: Four Honorary Attending Physicians to In-Patients. One Honorary Attending Surgeon to In-Patients. Four Honorary Attending Physicians to Out-Patients. One Honorary Attending Surgeon to Out-Patients. Two Honorary Orthopædic Surgeons. Honorary Attending Medical Officer to Diabetic Clinic. Honorary Attending Medical Officer to Allergy Clinic. Honorary Attending Medical Officer to Rheumatic Clinic. Honorary Attending Neuro-Surgeon. Honorary Attending Plastic Surgeon. Honorary Attending Oculist. Two Associate Surgeons to General Surgeons. Six Associate Physicians to In-Patient Physicians. Two Assistant Surgeons to Honorary Orthopædic Surgeons. Four Honorary Anæsthetists. All the above appointments are in the first instance for a period of 12 months from date of appointment, and applications close with the undersigned at 9 a.m. on Wednesday, April 24, 1946. Applications must be submitted on forms obtainable from the undersigned. By order.—S. Canny, Acting Secretary.

THE WESTERN SUBURBS HOSPITAL, LIVERPOOL ROAD, CROYDON. — Applications are invited for the position of Honorary Consultant Surgeon for a term of five years (with eligibility for reappointment). Applications to be in the hands of the undersigned not later than 5 p.m. on Friday, 15th instant.—E. R. Whereat, Secretary.

APPLICATIONS are invited for the position of Medical Superintendent, Mount Isa Hospitals Board, to be stationed at Mount Isa and superintend medical services in the Mount Isa and Camooweal districts. No right of private practice. Successful applicant required to provide and maintain a car. Salary (including maintenance of car), £1,150 per annum. Appointee may accept fees for certification issued for workers' compensation, insurance matters, invalid pensions, lead, etc., which emoluments are estimated to average £300 per annum. In addition £50 per annum is allowed for use of car attending patients in their own homes. Furnished house with electric light and water and sewerage provided free. Applicants required to furnish particulars of age, marital state, qualifications, and experience in surgery and medicine. Returned servicemen should supply particulars regarding the length, locality and nature of their service as members of the fighting forces. Applications close with the Secretary, Mount Isa Hospital, on Monday, 18th March, 1946. Mount Isa Hospitals Board, Box 25, P.O., Mount Isa.

ST. GEORGE DISTRICT HOSPITAL, KOGARAH, SYDNEY (325 Beds).—Applications are invited for the positions of (*a*) Temporary Honorary Consulting Obstetrician and (*b*) Temporary Honorary Morbid Anatomist, until most service medical officers have been demobilized. Applications close Monday, 18th March, 1946.—C. D. McIntyre, Secretary.

WANTED TO PURCHASE, instrument cabinet, medium size, second hand. Particulars to Dr. A.B.C., this office.

GIFFORD EDMONDS PRIZE IN OPHTHALMOLOGY. — The prize of £100 awarded every two years is offered for the best essay on a subject dealing with ophthalmology and involving original work, and is open to any British subject holding a medical qualification. The subject for the next essay is "The Intra-Ocular Foreign Body". Preference will be given to original work based on any branch of the subject rather than to compilations of the writing of previous observers. Essays must be sent in not later than December 31, 1946. A leaflet giving full particulars of the prize may be obtained from the Secretary, Royal London Ophthalmic Hospital (Moorfields Eye Hospital), City Road, London, E.C.1, England.

ATHERTON HOSPITALS BOARD, NORTH QUEENSLAND. — Immediate applications are invited for the position of Junior Resident Medical Officer. Salary at present £600 per annum with furnished or unfurnished, single or married accommodation at the hospital. Duties are to assist the Medical Superintendent and relieve him at any time he may be absent. Fare refunded after twelve months. Daily average, 75; major operations, 25 to 50 monthly; outpatients treated, 1,200 monthly. Applicants are advised to send applications per air mail.—W. H. Sherrin, Secretary, Atherton Hospitals Board.

FOR PRIVATE SALE, X-Ray Practice in convenient country centre. For further particulars apply XYZ, c.o. The Medical Journal of Australia, Seamer Street, Glebe, Sydney, N.S.W.

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

SUBURBAN PRACTICE for sale. Average takings £8,000. Suit partners. House (14 rooms) for sale or rental.

TASMANIAN CITY PRACTICE for sale, £3,000. House for sale or rental.

SUBURBAN AND COUNTRY PRACTICES for sale.

ASSISTANTS required, suburban and country practices.

FULL DETAILS ON APPLICATION

340 Swanston Street, Melbourne. Telegrams: "Medageney", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance

available in approved cases to facilitate transfers.

Telephones B 4159, XA 2644 (After Hours) **Telegrams: "Locumtens Sydney".**

C. R. STRANGE, Manager and Secretary.

A NEW, ONE WORD PRESCRIPTION FOR COUGHS AND COLDS

Synephricol (Stearns) combines Codeine Phosphate and expectorants of time-proven effectiveness with Neo-Synephrine Hydrochloride as a non-toxic broncho-dilator.

Synephricol contains in each teaspoonful—

Codeine Phosphate	1/8 grain
Neo-Synephrine Hydrochloride	1/12 ,,
Potassium Guaiacolsulphonate	1 ,,
Ammonium Chloride	1 ,,
Menthol	1/65 ,,
Chloroform	1/4 minim
Alcohol	8%

SYNEPHRICOL
COUGH SYRUP
Stearns

Synephricol

CONTAINING NEO-SYNEPHRINE

FACTS ABOUT SYNEPHRICOL

SEDATIVE—Contains Codeine Phosphate (1 grain per ounce for its sedative effect).

EXPECTORANT—Ammonium Chloride and Potassium Guaiacolsulphonate provide safe, dependable expectorant action.

DECONGESTANT — Broncho-dilatation is produced by Neo-Synephrine Hydrochloride — non-toxic, orally active vaso-constrictor.

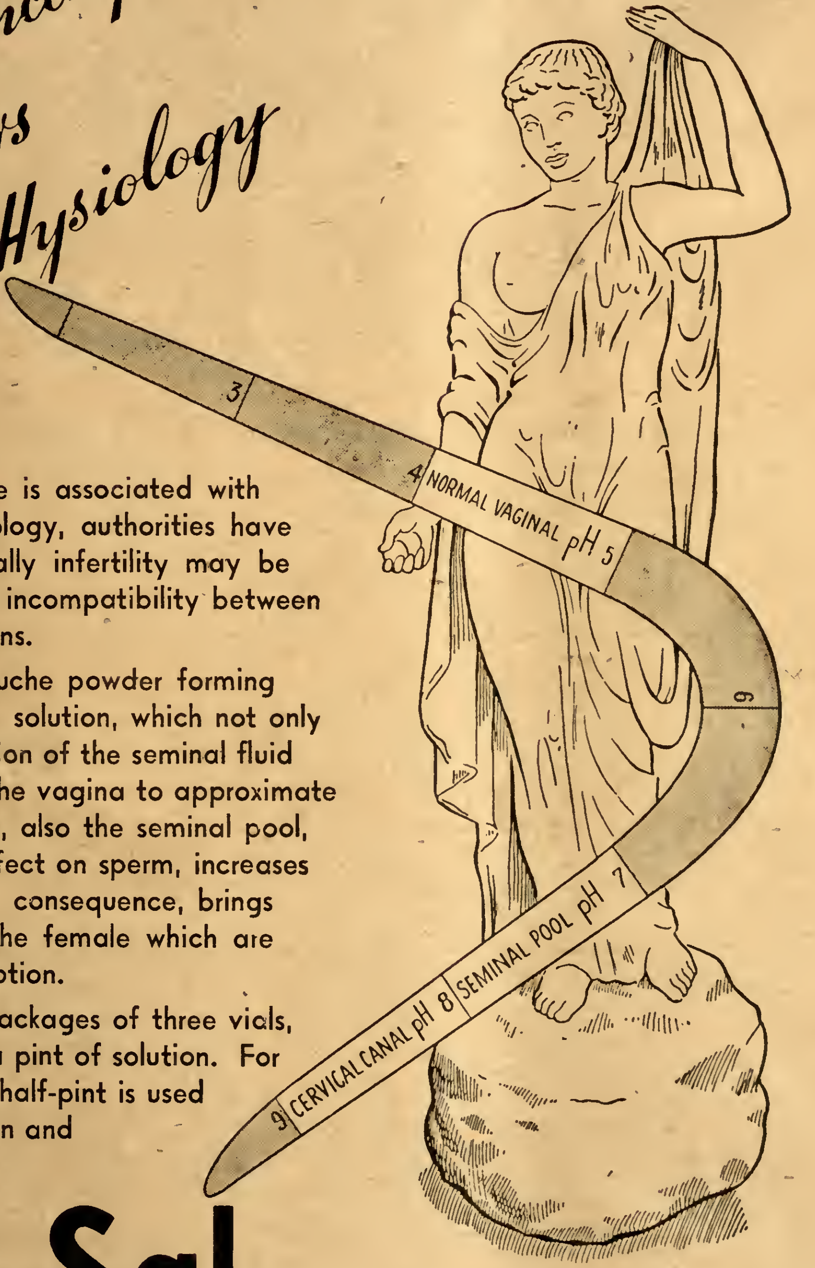
DOSAGE FORMS—Available in 4-oz., 16oz. and 80oz. bottles.

Frederick Stearns & Company
Division

SYDNEY, AUST. AUCKLAND, N.Z. NEW YORK KANSAS CITY SAN FRANCISCO WINDSOR, ONTARIO DETROIT, U.S.A.

INS6

When secretional incompatability impairs Vaginal pHysiology



Where failure to conceive is associated with no evident organic pathology, authorities have concluded that occasionally infertility may be ascribed to some form of incompatibility between male and female secretions.

Nutri-Sal is a vaginal douche powder forming an isotonic Ringer-glucose solution, which not only promotes optimum reception of the seminal fluid by correcting the pH of the vagina to approximate that of the cervical canal, also the seminal pool, but, due to its nutrient effect on sperm, increases the sperm motility and, in consequence, brings about conditions within the female which are most conducive to conception.

Nutri-Sal is available in packages of three vials, each of which makes up a pint of solution. For the average patient, one half-pint is used per douche. By prescription and inexpensively priced.

Nutri-Sal

An Adjuvant in the Therapy of Infertility

A PRODUCT OF JOHNSON & JOHNSON

ANNOUNCEMENT !

STANFORD X-RAY CO. PTY. LTD.— Manufacturers and Suppliers of X-ray and Electro-medical Equipment—direct your attention to their interstate offices and showrooms, where competent and highly skilled X-ray engineers are available to assist you with your X-ray and Electro-medical technical problems.

ADELAIDE: 188 North Terrace—Cent. 5895.
BRISBANE: Wickham Terrace—B 4291.
HOBART: 94 Liverpool Street—W 1876.
MELBOURNE: 71 Collins Street, C.1—JM 1695, Cent. 5695.
PERTH: 20 Howard Street—B 8448.
SYDNEY: 135 Macquarie Street—B 7263.

Swift Correction of Intestinal Stasis

Physicians know the far-reaching consequences which result from the condition of intestinal stasis, and realize that many symptoms, including cardiac asthma, neuritis, arthritis, gouty eczema, etc., may be removed by its relief.

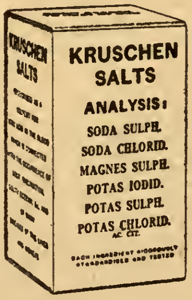
While many aperients will give the necessary relief to the intestinal tract, in many cases this is accompanied by unpleasant and often serious after-effects. Saline purgatives sooner or later lose their effectiveness and more severe evacuants must be resorted to.

Carefully controlled clinical tests conducted a few years ago in England established the value of a small regular dose of the simple mixture of salts in Kruschen Salts, in the prophylaxis and treatment of colon stasis and dyschezia.

Kruschen introduces healthy regularity and is neither injurious nor habit-forming.

KRUSCHEN SALTS

E. Griffiths Hughes Ltd. Established 1756.



WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.	For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.	In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

COMMONWEALTH DEPARTMENT OF HEALTH: VACANCIES FOR MEDICAL SUPERINTENDENT AND MEDICAL OFFICER, ALICE SPRINGS, N.T. CONDITIONS OF SERVICE.—*Medical Superintendent:* Salary range £1,052 to £1,202 per annum (annual increments £50). *Medical Officer:* Salary range £952 to £1,102 per annum (annual increments £50). The above salaries are inclusive of cost of living adjustment, which at present is £40. In addition, district allowance of £70 (married) or £42 (single) is payable. *Hours of Duty:* No fixed hours. The Medical Superintendent and the Medical Officer are not regarded as eligible for special monetary compensation for overtime, Sunday or holiday duty. No right of private practice. No superannuation. Motor-car transport provided; or mileage allowance at Public Service rates if using own car. Housing and furniture deductions from salary at Public Service rates: (*a*) Rental deduction at the rate of 10% of the minimum salary of the position. (*b*) Furniture rented on the basis of 10% of purchase price. *Fares:* Fares to Alice Springs will be paid by the Department, but in the event of the appointee not remaining in the service for at least six months, he may be required to refund the fare paid on his behalf. *Recreation Leave:* Thirty (30) days per annum, exclusive of Sundays and holidays, for each twelve months' service, which may be allowed to accumulate for three consecutive years. *Sick Leave:* In accordance with Public Service conditions. Engagement may be terminated at any time without notice by the Director-General of Health on the grounds of misbehaviour or inefficiency; otherwise it may be terminated by one month's notice in writing by either the Director-General of Health or the appointee. Preference will be accorded to persons with the necessary qualifications, in accordance with the provisions of the Re-establishment and Employment Act (No. 11 of 1945). Applications showing full name, date and place of birth, war service (if any) and full details of qualifications and experience should be forwarded to reach the Director-General of Health, Canberra, A.C.T., on or before 22nd March, 1946.

MAREEBA HOSPITALS BOARD. Applications are invited for the position of Resident Medical Officer. Salary £600 per annum, plus £2 2s. per week living allowance and reimbursement of all reasonable expenses incurred whilst visiting subsidiary hospitals. Furnished quarters are available at Mareeba Hospital for single applicant. Duties consist of visiting Board's subsidiary hospitals at Mount Molloy, Chillagoe, and Mount Mulligan periodically (such visits requiring about one week out of every four) and generally assisting the Medical Superintendent when at the main hospital, Mareeba. Previous hospital residency not essential. Duties to commence as soon as possible. Full fares to Mareeba refunded after 12 months' service. Applications to be addressed to F. H. Jay, Secretary, P.O. Box 27, Mareeba, N.Q. Applicants are advised to send applications per air mail, owing to the possibility of disruption of train services through floods.

FOR SALE, Jones Ear, Nose and Throat Revolving Chair. Apply WA 1646.

ROYAL SOUTH SYDNEY HOSPITAL: HONORARY MEDICAL STAFF.—Applications are invited for the following appointments tenable for a period of two years: Senior Honorary Physicians (2), Honorary Assistant Physicians (5), Honorary Rheumatologist (1), Honorary Assistant Rheumatologist (1), Honorary Psychiatrist (new position) (1), Senior Honorary Surgeons (4), Senior Honorary Assistant Surgeons (2), Honorary Assistant Surgeons (2), Senior Honorary Gynæcologist (1), Honorary Assistant Gynæcologist (1), Senior Honorary Ear, Nose and Throat Surgeon (1), Honorary Assistant Ear, Nose and Throat Surgeons (3), Senior Honorary Orthopædic Surgeon (1), Honorary Assistant Orthopædic Surgeon (1), Senior Honorary Urologist (1), Honorary Assistant Urologist (new position) (1), Senior Honorary Dermatologist (1), Honorary Assistant Dermatologist (new position) (1), Senior Honorary Ophthalmic Surgeons (2), Assistant Honorary Ophthalmic Surgeons (2), Senior Honorary Radiographer (1), Honorary Assistant Radiographer (new position) (1), Senior Honorary Anæsthetist (1), Honorary Assistant Anæsthetists (4), Honorary Dental Surgeon (1). Applications for the foregoing appointments will be received on the following terms and conditions: Honorary Medical Staff term: 1st May, 1946, to 30th March, 1948. Present members of the Honorary Medical Staff are eligible but not entitled to reappointment. Should any successful applicant who is still on war service be unable to take up the appointment on the due date, the Board will grant leave until his return. All applicants must complete a Royal South Sydney Hospital application form and should attach copies of three credentials. Forms are available from the Medical Superintendent, who will also give particulars of duties. Canvassing of members of the Board will disqualify. Applications (closing 30th March, 1946, at 12 noon) to be addressed, "The President, Royal South Sydney Hospital, Zetland, Sydney", and envelopes endorsed "Honorary Medical Staff Application".—C. J. Dransfield, Secretary.

THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, PITT STREET, REDFERN.—Applications are invited from duly qualified medical practitioners for the positions of: Hon. Neurosurgeon (1), Hon. Psychiatrist (1), Hon. Assistant Pædiatrician (1), Hon. Assistant Surgeon to Ear, Nose and Throat Department (1), Hon. Assistant Anæsthetist (1). Applications, on the prescribed form obtainable from the hospital, together with testimonials, to be in the hands of the undersigned not later than Saturday, 16th March, 1946.—Mary C. Puckey, Chief Executive Officer and Medical Superintendent.

VICTORIAN EYE AND EAR HOSPITAL.—Applications are invited for appointment to the Honorary Surgical and Medical Staff of the above hospital: Honorary Ophthalmic Surgeons, Honorary Aural Surgeons, Honorary Assistant Ophthalmic Surgeons, Honorary Assistant Aural Surgeons, Honorary Clinical Assistants (Ophthalmic), Honorary Clinical Assistants (Aural). Application forms may be had on application to the undersigned. All applications to be lodged by not later than 23rd March, 1946.—J. Millar, Manager and Secretary.

ST. VINCENT'S HOSPITAL (CLINICAL SCHOOL), SYDNEY.—The following vacancies have occurred on the staff of St. Vincent's Hospital, the majority being due to the retirement of members of the staff, who are eligible for re-election. Applications are invited, and will be received up to April 20, 1946, from qualified medical practitioners for the following positions for a period of five years. Each application must be accompanied by a certificate of birth of the applicant, if this has not already been lodged: *Physicians:* 4 Physicians, 6 Assistant Physicians—2 new appointments. *Surgeons:* 4 Surgeons, 4 Assistant Surgeons. *Specialists:* 2 Gynæcologists, 2 Assistant Gynæcologists — 2 new appointments, 1 Senior Ophthalmic Surgeon, 2 Ophthalmic Surgeons, 4 Assistant Ophthalmic Surgeons, 2 Surgeons for Diseases of the Ear, Nose and Throat, 4 Assistant Surgeons for Diseases of the Ear, Nose and Throat—1 new appointment, 1 Dermatologist, 4 Assistant Dermatologists, 5 Radiologists, 1 Psychiatrist, 1 Orthopædic Surgeon and Director of Orthopædic Department, 1 Assistant Orthopædic Surgeon, 1 Urological Surgeon, 1 Assistant Urological Surgeon, 1 Radiotherapist, 1 Assistant Radiotherapist, 1 Tutor in Anæsthetics, 1 Assistant Tutor in Anæsthetics, 6 Anæsthetists, 2 Dental Surgeons. Applications are invited for the following positions for a period of two years. Successful applicants will be eligible for reappointment: 1 Relieving Assistant Physician, 1 Relieving Assistant Surgeon. Applications are also invited for the following positions for a period of one year. All are new appointments: 6 Clinical Assistants to Medical Out-Patients' Department, 4 Clinical Assistants to Surgical Out-Patients' Department, 2 Clinical Assistants to Orthopædic Department, 1 Clinical Assistant to Diabetic Clinic, 4 Clinical Assistants to Ophthalmological Department. Address applications to the Superior General, St. Vincent's Hospital, Sydney.

RICHMOND HOSPITALS BOARD. — Applications are called for the position of Medical Officer to the Richmond District Hospital, with the right of private practice. Salary classification subject to schedule being prepared by Public Service Commissioner with a minimum of £700. Free unfurnished residence provided. Applicants require to state whether married or single, and earliest can commence duties, and to submit with application references. Appointment also carries Government Medical Officer, £50, and Medical Officer of Health, £25. Since the appointee will have the right of private practice, when he goes on holiday leave a *pro rata* arrangement will be made between the hospital board and the doctor to share the expense of a *locum tenens.* Applications close with the undersigned at 12 noon on Wednesday, March 20, 1946.—(Sgd.) L. W. Berryman, Secretary, Box 19, P.O., Richmond, N.Q.

COMMONWEALTH DEPARTMENT OF HEALTH: NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL. The final date for the receipt of applications for grants for Overseas Travelling Fellowships by the Director-General of Health has been extended until 31st March, 1946. Advice has been received from the Commonwealth Fund of New York that it will not make any money available for Overseas Travelling Fellowships this year.

QUEENSLAND INSTITUTE OF MEDICAL RESEARCH, BRISBANE.—Applications are invited for the position of Director of the above Institute. Subject to the general direction of the Council of the Institute, duties will be: (1) to direct research work and control and manage research staff of Institute; (2) to develop Institute on a comprehensive research basis; (3) to assist in planning permanent housing of Institute. Salary £2,000 per annum. Tenure is for seven years (subject to good conduct and efficient service) with eligibility for reappointment. Leave to visit other research centres and travelling expenses will be granted at discretion of Council. Appointee will be required to commence duty as early as possible in 1947. Applications close on 31st July, 1946, with the Secretary, Council of Queensland Institute of Medical Research, Box 917M, G.P.O., Brisbane, from whom intending applicants should obtain application forms and any further information required. The Institute has been recently established by the Queensland Government to undertake under the general control of a representative council research in any branches of medical science. It possesses at present only a skeleton staff and temporary accommodation. There is access to the hospitals of Brisbane (over 2,000 beds) and liaison with the University of Queensland.

CHILDREN'S HOSPITAL, CARLTON. — The Committee of Management invite applications, with testimonials, from legally qualified medical practitioners for the undermentioned positions: Eighteen Honorary Clinical Assistants to Honorary Out-Patient Physicians. Eight Honorary Clinical Assistants to Honorary Out-Patient Surgeons. Four Honorary Clinical Assistants to Honorary Psychiatrist. Three Honorary Clinical Assistants to Ear, Nose and Throat Department. Three Honorary Clinical Assistants to Honorary Dermatologist. One Honorary Clinical Assistant to Honorary Radiologist. One Honorary Clinical Assistant to Physiotherapy Department. One Honorary Clinical Assistant to Honorary Oculist. Three Honorary Dentists. All the above appointments are for a period of 12 months from April 1. Applications close on Wednesday, March 13, and must be submitted on forms obtainable from the undersigned. By order.—S. Canny, Acting Secretary.

PROFESSIONAL ENGAGEMENTS: CHILDREN'S HOSPITAL, CARLTON. — The committee invite applications, with testimonials, from legally qualified medical practitioners up to 12 noon on Wednesday, 13th March, for the undermentioned positions. The period of appointment in all instances is for a period of 12 months from 1st April, 1946: Resident Medical Superintendent: salary £600 per annum. Resident Registrar: salary £360 per annum. Resident Assistant Registrar: salary £340 per annum. Eight Junior Resident Medical Officers: salary £200 to £300 per annum, according to period of graduation. Applications must be submitted on forms obtainable from the undersigned. By order.—S. Canny, Acting Secretary.

LAUNCESTON GENERAL HOSPITAL.—Servicemen who wish to do post-graduate work at this hospital are asked to get in touch with the Surgeon Superintendent as soon as possible.

G P

NEOCAL

Each tablet contains:

DI-CALCIUM PHOSPHATE	gr. 7.5
FERROUS SULPHATE	gr. 0.33
VITAMIN B_1	100 I.U.
VITAMIN D	400 I.U.

100 Tablets
NEOCAL
DI-CALCIUM PHOSPHATE
FERROUS IRON
with
VITAMINS B. and D
G.P.
GP

SUPPLIED IN BOTTLES OF
100 AND 1,000 TABLETS

PRICE TO PATIENTS
6/-
PER 100 TABLETS

G.P.
PTY. LTD.
Manufacturers of Standardized
Biological and Pharmaceutical Products
Laboratories and Head Office:
65 Macquarie Street, Sydney, Australia.
Telephone: B 6257 (3 lines).
Telegraphic and Cable Address: Glandular, Sydney.

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS SIMPSON, of Fairholm Street, Strathfield, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

THE MEDICAL JOURNAL OF AUSTRALIA

Vol. I.—33rd Year. SYDNEY, SATURDAY, MARCH 16, 1946. No. 11.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units **10/6**

This quantity is sufficient for a series of parenteral doses.

(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units **5/6**

This quantity is intended for a single parenteral dose.

(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units **4/6**

This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired.

(Available also in boxes holding 6 ampoules.)

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

The Penicillin Order published in *Gazette* No. 189 of 20th September, 1944, and in The Medical Journal of Australia of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

The addresses of the Senior Commonwealth Medical Officers are: **NEW SOUTH WALES,** Customs House, Circular Quay, Sydney; **VICTORIA,** A.C.A. Building, 118 Queen Street, Melbourne; **SOUTH AUSTRALIA,** C.M.L. Building, 41-47 King William Street, Adelaide; **WESTERN AUSTRALIA,** 4th Floor, G.P.O., Perth; **TASMANIA,** Commonwealth Health Laboratory, Launceston; **QUEENSLAND,** Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES

PARKVILLE, N.2, VICTORIA, AUSTRALIA

ANDREW'S PHARMACEUTICAL PREPARATIONS

BROMACLIMAN

for the therapy of menopausal disturbances and climacteric disorders. An excellent sedative and antispasmodic, which gives instant relief, acting not only on the heart and vascular system, but also on the central nervous system.

The following well-balanced and effective formula is a result of extensive and continuous specialisations over a long period:

℞	Bromised Ovary with 20% Brom.	gr. ¾
	Theobromine Alkaloid	,, ¾
	Calcium Lactate	,, 3
	Benzyl Succinate	,, ½

Packed in bottles of 50 tablets. Available at all leading chemists.

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexœstrol
Sodium Desoxycholate
Stibophen
Stilbœstrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.
D.D.T.

FOR STUDENTS **J. & A. CHURCHILL LTD.** **FOR DOCTORS**

SYNOPSIS OF REGIONAL ANATOMY
By T. B. JOHNSTON, M.D. *Fifth Edition.* 17 Illustrations. 16s.

A TEXTBOOK OF BIOCHEMISTRY
For Students of Medicine and Science
By A. T. CAMERON, D.Sc., F.R.I.C., F.R.S.C. *Sixth Edition.* 3 Plates and 25 Text-figures. 18s.

SURGICAL NURSING AND AFTER-TREATMENT
By H. C. RUTHERFORD DARLING, M.D., M.S., F.R.C.S. *Ninth Edition.* 210 Illustrations. 12s. 6d.

THE SCIENCE AND PRACTICE OF SURGERY
By W. H. C. ROMANIS, F.R.C.S., and P. H. MITCHINER, *C.B., C.B.E.*, M.D., M.S., F.R.C.S. *Seventh Edition.* 810 Illustrations. Two Volumes. 20s. each vol.

A POCKET MEDICINE
By G. E. BEAUMONT, D.M., F.R.C.P. 8s. 6d.

A POCKET SURGERY
By P. H. MITCHINER, *C.B., C.B.E.*, M.D., M.S., and A. H. WHYTE, *D.S.O.*, M.S. 8s. 6d.

PHYSICAL CHEMISTRY OF CELLS AND TISSUES
By RUDOLF HOBER, M.D., and Collaborators. 70 Illustrations. 42s.

FORENSIC MEDICINE
By SYDNEY SMITH, M.D., F.R.C.P. *Eighth Edition.* 179 Illustrations. 28s.

RECENT ADVANCES IN MEDICINE
By G. E. BEAUMONT, D.M., F.R.C.P., and E. C. DODDS, *M.V.O.*, M.D., F.R.C.P., F.R.S. *Eleventh Edition.* 43 Illustrations. 18s.

CHEST EXAMINATION: The Correlation of Physical and X-Ray Findings in Diseases of the Lung
By R. R. TRAIL, *M.C.*, M.D., F.R.C.P. *Second Edition.* 100 Illustrations. 12s. 6d.

CLINICAL PATHOLOGY
By P. N. PANTON, M.B., B.C., and J. R. MARRACK, *D.S.O., M.C.*, M.D. Revised with the assistance of H. B. MAY, M.A., M.B., M.R.C.P. *Fifth Edition.* 12 Plates (10 coloured) and 45 Text-figures. 21s.

THE QUEEN CHARLOTTE'S TEXTBOOK OF OBSTETRICS
By Members of the Clinical Staff of the Hospital. *Sixth Edition.* 4 Coloured Plates and 290 Text-figures. 25s.

DISEASES OF THE EYE
By SIR JOHN H. PARSONS, *C.B.E.*, F.R.C.S., F.R.S. *Tenth Edition.* Revised with the assistance of H. B. STALLARD, M.D., F.R.C.S. 21 Plates, 20 in Colour, and 372 Text-figures. 25s.

MEN UNDER STRESS (In and After Combat)
By R. R. GRINKER, *M.C.*, Lt.-Col., U.S. Army Air Forces, and J. P. SPIEGEL, *M.C.*, Major, U.S. Army Air Forces. 25s.

104 GLOUCESTER PLACE, LONDON, W.1

Made in Australia

SIMANITE

INSUFFLATION POWDER
and
VAGINAL SUPPOSITORIES

provide an effective treatment for vaginitis of any origin. SIMANITE products are non-irritant and non-toxic.

CARTER & CO. (AUST.) PTY. LTD.
267 Clarence Street, Sydney.
335 Flinders Lane, Melbourne.

Agents:
GRADWELL BROS.,
Brisbane.
W. RAMSAY PTY. LTD.,
Adelaide.
S. VAN DAL & CO.,
Perth.

"Clements" Angle Type
ELECTRIC CENTRIFUGES
with Six 15 ml. Tubes

● Tubes are carried at an angle which greatly reduces the time of separation as compared with the standard type centrifuge. ● Tubes can be placed at either 45° or 25° from the vertical, and this adjustable angle results in further saving of time. ● 45° for separation of fluids such as urine, where the sediment is sticky and adheres to the wall of the tubes. ● 25° for emulsive fluids, which require a high separating power, such as blood, etc. ● The angle principle makes possible the separation of particles whose S.G. only slightly exceeds that of the fluid itself.

● 230-250 volts A.C. or D.C. ● Variable speed, max. 3,800 r.p.m. ● Height 10½", dia. 8". ● Weight 30 lbs. ● Mounted on three rubber feet. ● Fully portable. ● Perfectly balanced. ● No necessity to fasten down. ● Attractively finished in chrome and brocade enamel.

H. I. CLEMENTS, ENGINEERS, ETC.,
79 McLACHLAN AVENUE, SYDNEY. FA 1478.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED

Research and Production

IN the years before 1939 I.C.I. had already built up an important chemotherapeutic research organisation with a view to the discovery and development of new organic substances for use by the Medical and Veterinary professions in the fight against disease.

At the outbreak of war, however, with the urgent need of the Fighting Services for vital drugs formerly obtainable only from abroad, the activities of this organisation were directed toward new problems, and entry into manufacture was greatly accelerated in an effort to rectify a national deficiency. To co-ordinate the work of the research and production departments a new company, Imperial Chemical (Pharmaceuticals) Limited, was formed in 1942.

During a period beset with all the difficulties of war, chemical, pharmacological and clinical researches have been continued to assess the therapeutic value of organic substances and to produce them in forms convenient for human and animal administration. Meticulous analytical control had also to be exercised throughout the manufacturing and finishing processes to ensure the uniformity of strength and the purity of the products.

In recent years a number of important drugs have been produced on a large scale by this new Company for use by the essential Services. Especially noteworthy are the anti-malarials, mepacrine and pamaquin; the sulphonamides, including a new derivative known as "Sulphamezathine"; the flavines, and anaesthetics such as "Trilene." The Company has also played no small part in the production of Penicillin.

The needs of war are now at an end, but the fight against disease must go on, and the full resources of Imperial Chemical (Pharmaceuticals) Limited are again being devoted with even greater intensity to the elucidation by original research of new chemotherapeutic substances for the treatment of specific diseases.

The Company's products are now becoming more freely available, and enquiries for further information should be addressed to I.C.I. of Australia and New Zealand Limited, who are the sole distributors for Imperial Chemical (Pharmaceuticals) Limited in Australia.

"AVLON" TRADE MARK

IMPERIAL CHEMICAL INDUSTRIES OF A. & N.Z. LTD.

ORGANIC PRODUCTS DIVISION, 408 LATROBE STREET, MELBOURNE

ALSO AT SYDNEY AND BRISBANE

10PH-EH

---

appetising

resistance-building

nourishing

readily assimilable

energising

MILO
INDUCES PEACEFUL SLEEP
MILO
NESTLE'S
FORTIFIED
TONIC FOOD
A DRIED MILK FOOD PRODUCT
STRENGTH
½ LB. NET
PREPARED IN AUSTRALIA

A VITAMINISED TONIC FOOD WHICH CAN BE CONFIDENTLY RECOMMENDED FOR CONVALESCENTS, POST-OPERATIVE CASES AND NURSING MOTHERS

MILO is a highly palatable blend of pure country milk and malted cereals to which essential vitamins have been added. It has a valuable content of organic phosphates, calcium and mineral salts.

MILO has an appetising chocolate flavour and can be served hot or cold with equal facility and benefit. It has been proved to possess stamina-building qualities and to be of great assistance in the inducement of energy-restoring sleep.

MILO

The Fortified **TONIC FOOD**

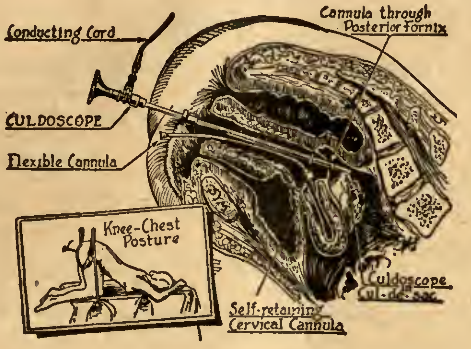
A NESTLÉ'S PRODUCT

COPYRIGHT R1232

The Decker CULDOSCOPE

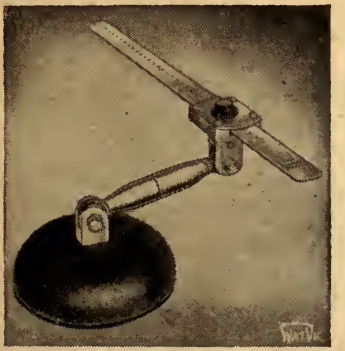
A NEW INSTRUMENT FOR ACCURATE DIAGNOSTIC PROCEDURES IN THE FEMALE PELVIS . . . .

THE Decker Culdoscope consists of a right angle vision telescope, trocar and cannula especially designed to facilitate puncture of the cul-de-sac, and a set of three cervical cones and flexible tube with Luer lock connectors. With this instrument accurate visual diagnosis may be made, as all organs of the female pelvis are readily observed when patient is in the knee-chest posture as illustrated. This instrument also enables the operator to procure a photographic record of the appearance of the pelvic organs.

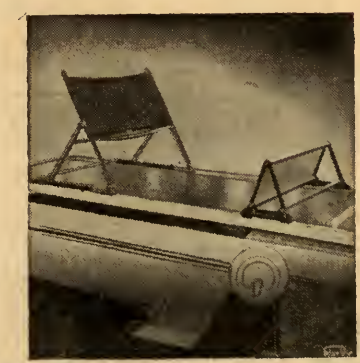

Conducting Cord
Cannula through Posterior Fornix
CULDOSCOPE
Flexible Cannula
Knee-Chest Posture
Culdoscope in Cul-de-sac
Self-retaining Cervical Cannula

WatVic Apparatus for Pelvimetry

For Anterior/Posterior position (Thom/Torpin method). Includes adjustable fittings, arms, localizing pointers, locking devices and radiopaque plaque suitably perforated.



For Lateral position (Thom/Torpin method). Includes base, adjustable members, metal bar suitably perforated and fitted with spirit level.



Back Rest and Foot Rest arranged to fit WatVic Double Two and Double Three X-Ray Tables. Adjustable.

For full particulars 'phone or write nearest WatVic Showrooms.

WATVIC

WATSON VICTOR
LIMITED

Sydney, Melbourne, Brisbane, Adelaide, Perth, Wellington, Auckland, Christchurch.

"ALPHIDINE" NON-TOXIC IODINE
IN RHEUMATIC AND RHEUMATOID CONDITIONS

"PALATINOID" "IOSAL" (O.S. & Co.) No. 7190

℞ *Alphidine* - *gr.* ½
Thyroid - - *gr.* ½
Acytosal - - *gr.* 4

The formula of this Palatinoid was suggested to us by Dr. Watt, of Guy's Hospital, London, and, in the opinion of leading Practitioners, it has proved the most valuable addition to Rheumatism therapy of recent years, and especially so in the case of elderly people. In menopausal Rheumatism and allied conditions, the results are of outstanding excellence, as evidenced by the case histories available.

"PALATINOID" ARTHRITAL (O.S. & Co.) No. 7421

℞ *Alphidine* - *gr.* ½
Guaiacum Resin *gr.* 2
Sulphur Praecip. *gr.* 2

In the Rheumatoid group this Palatinoid is described as the "Alphidine" Spa Treatment. In cases of Arthritis with thickening and set joints it has proved particularly effective. Its use in conjunction with Iodo-Salve as a topical application has been the subject of many favourable reports.

In bottles of 25, 100 and 1,000.

IODO-SALVE (IODISED BALMOSA)

A non-greasy snow-like cream that is rapidly absorbed. In localised pain and stiffness it exercises the characteristic effects of Iodine and the Salicylates. Useful also in Sciatica, Lumbago, Neuritis, etc. In ½oz. jars and 1oz. tubes and 16oz. jars.

Manufactured by

OPPENHEIMER SON & CO. LTD., LONDON

Samples and literature post free on application to:
Agents for Australia and New Zealand: MUIR & NEIL PTY. LTD., 479 Kent Street, SYDNEY

'VARIBAN' Elastic Plaster BANDAGE (Regd.)

For the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

Variban
ELASTIC BAND

This Bandage is made from a specially woven selvedge material possessing very elastic properties and evenly spread with an Antiseptic Zinc Oxide Paste. It is self-adhesive, readily conforms to the shape of the limb and when carefully applied forms an even surface dressing which will not crease or slip, yielding an unusually firm support and yet permit of easy removal.

"VARIBAN" Elastic Plaster Bandages are extensively used in many well-known Hospitals for the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

The application of "VARIBAN" Elastic Plaster Bandages for the treatment of Varicose Ulcers, etc., does not necessitate the patient lying up, in fact permits the continuance of light duties. It ensures rapid healing and gives very substantial support to the affected limb.

Supplied in the following widths, 2½" and 3", and when stretched measure 6 yards (approximately).

Manufactured by

CUXSON, GERRARD & CO. LTD., OLDBURY, ENGLAND

Agents: MUIR & NEIL PTY. LTD., 479 KENT STREET, SYDNEY

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, MARCH 16, 1946. No. 11.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

Penicillin Sensitivity of Streptococci Mostly of Groups A, B, C and G, by R. T. Simmons and R. Christie .. 349
Fractures of the Carpal Scaphoid, by J. R. Barbour 352
Placenta Prævia, by R. H. Syred .. 357
Report on a Series of Cases of Sinusitis Treated by Chemotherapy at an Australian General Hospital, by R. H. Bettington and G. K. Vincent 358
An Analysis of Deformities among Recruits, with Remarks on Sub-Standard Types, by W. E. Roberts .. 360
Young Dr. Storch of Adelong, by Richard T. Kennedy .. 362
Suture of Deep Soft Tissue War Wounds Aided by Penicillin Therapy, by Thomas F. Rose and Arthur Newson .. 364

REPORTS OF CASES—

Leprosy: A Report of Nine Cases Among Natives of the Mount Hagen Area in New Guinea, by Nathan Shlimovitz .. 369
A Note on Two Laboratory Infections with the Virus of Newcastle Disease of Fowls, by S. G. Anderson, M.B., B.S. .. 371

REVIEWS—

Progress in Neurology and Neuropsychiatry .. 371
Virus as Organism .. 372
Surgery for Dental Students .. 372

LEADING ARTICLES—

The Treatment of Rheumatism by Dehydration .. 373

CURRENT COMMENT—

The Health of the Pre-School Child in Australia 374
Congenital Afibrinogenæmia .. 375
The Prevention of Sunburn .. 375

ABSTRACTS FROM MEDICAL LITERATURE—

Bacteriology and Immunology .. 376
Hygiene .. 377

BRITISH MEDICAL ASSOCIATION NEWS— Page.

Scientific .. 378
Notice .. 380

NAVAL, MILITARY AND AIR FORCE—

Decorations .. 380

CORRESPONDENCE—

An Unusual Case of Malaria .. 380
Epidemic Polyarthritis .. 380
The Treatment of Scabies .. 380
Inguinal Hernia and its Repair .. 381
Australia and Science: The University of Sydney and Scientists .. 381
Ulcers in the Mouth: An Appeal for Help .. 382
Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease .. 382
On the Prickly Heat .. 382

MEDICAL PRACTICE—

Dangerous Drugs Regulations of Victoria .. 382
The Police Offences (Amendment) Act of New South Wales .. 383

POST-GRADUATE WORK—

The Melbourne Permanent Post-Graduate Committee's Programme for April .. 383
Overseas Travelling Fellowships .. 383
NOMINATIONS AND ELECTIONS .. 383

AUSTRALIAN MEDICAL BOARD PROCEEDINGS—

Queensland .. 384
A MEMORIAL TO THE LATE PROFESSOR JAMES THOMAS WILSON .. 384

OBITUARY—

Wilfred Vickers .. 384
MEDICAL APPOINTMENTS .. 384
DIARY FOR THE MONTH .. 384
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 384
EDITORIAL NOTICES .. 384

PENICILLIN SENSITIVITY OF STREPTOCOCCI MOSTLY OF GROUPS A, B, C AND G.

By R. T. SIMMONS and R. CHRISTIE.
From the Commonwealth Serum Laboratories, Melbourne.

THE sensitivity of hæmolytic streptococci to penicillin was first demonstrated by Fleming (1929), who tested the sensitivity of various organisms by the "gutter-plate" technique.

Tests for penicillin sensitivity of *Streptococcus pyyogenes* (three strains) were made by Abraham *et alii* (1941) by the tube technique, and the strains were found to be sensitive. Hobby *et alii* (1942) reported that hæmolytic streptococci amongst other organisms were sensitive to penicillin, but no details as to the number of strains tested or the Lancefield groups were given.

McKee *et alii* (1944) tested various organisms for penicillin sensitivity, and among these were five strains of *Streptococcus pyogenes* which were found to be sensitive.

Dawson *et alii* (1944) report having tested 50 strains of non-hæmolytic streptococci isolated from cases of subacute bacterial endocarditis; 10 of these strains were found to fall into Lancefield's groups B, C, D, F and H, and all except one strain were found to be approximately as sensitive as a standard streptococcus used for comparison. The tests were made by a tube technique.

Watson (1944) stated that in general the effectiveness of penicillin in the treatment of infections *in vivo* is closely paralleled by its activity against the same infectious agents *in vitro*. He tested the penicillin sensitivity of approximately 50 strains of streptococci of Lancefield groups A to N, isolated from human and other sources, by the tube dilution method described by Rammelkamp (1942), and found that there was little variation in sensitivity among the strains within any single group, and that the strains of all groups tested were penicillin-sensitive except those of group D. Strains of groups B, E, F, K and N were slightly less sensitive than those of groups A, C, G, H, L and M. The series included only 13 strains of group A streptococci and a few strains of groups B, C and G from human sources.

Rank (1944) has found that hæmolytic streptococci are the most rapidly eliminated of all organisms from wounds during penicillin treatment, and that they usually disappear in two or three days.

Various modifications of technique by means of tubes or plate tests have been suggested for determining the degree of sensitivity to penicillin of different organisms, but no large collection of β-hæmolytic streptococci isolated from human sources appears to have been tested to date.

The general opinion on streptococcus sensitivity to penicillin, as shown in the literature, is that strains of groups A, C and G are sensitive, strains of group B slightly less so and strains of group D relatively resistant. The purpose of the work reported in this paper was to examine the reliability of this generalization when a large number of streptococci was tested. Tests have been carried out on 721 strains of streptococci, mostly of groups A, B, C and G. The majority of these strains had been isolated prior to the advent of penicillin treatment, but a few isolated during penicillin treatment were included in the series. One hundred and thirty-five of these strains were from sources other than human.

The technique employed for testing the penicillin sensitivity of the cultures in this series was similar to that used by Dr. E. A. North of these laboratories in tests on the penicillin sensitivity of staphylococci. Various concentrations of penicillin were incorporated in horse-blood agar plates, and the plates, after being cooled and dried, were inoculated with broth cultures of the streptococci to be tested. The results were read after incubation overnight at 37° C.

This technique[1] is simpler than either the "gutter-plate" or the tube method. It does not necessarily give results accurately comparable with either of these two methods, but it was considered suitable, since we were more concerned with variations in sensitivity within the groups than with the obtaining of absolute figures for penicillin sensitivity. It was soon found that when streptococci had been grouped by the precipitation test their sensitivity could be forecast with a fair degree of accuracy, and that only a limited range of tests was necessary to serve as a check.

Materials and Methods.

Strains Tested.

The following β-hæmolytic streptococci of human origin were tested:

Group A: 288 strains, representative of the 26 serological types of Griffith (1934) and the 12 Australian types described by Rudd, White and Ward (1939) and by Keogh, Simmons and Wilson (1941).
Group B: 102 strains.
Group C: 118 strains.
Group G: 72 strains.

The physiological characters and serological types of the B, C and G streptococci were described by Simmons and Keogh (1940).

The following miscellaneous strains were tested:

Group B: 120 strains of hæmolytic and non-hæmolytic streptococci (*Streptococcus agalactiæ*) isolated from bovine sources. These strains included the serological types isolated by Stableforth (1937) and five serological types isolated by Mr. D. Murnane from Victorian dairy herds (about 1940). A group of recently isolated strains before and after penicillin treatment were kindly supplied to us by Mr. D. Murnane and Mr. E. Munch-Petersen, of the Animal Health Research Laboratory, Council for Scientific and Industrial Research, Melbourne.
Group C: 12 strains of equine streptococci representative of the serological types described by Bazeley and Battle (1940).
Group D: Five strains.
Group E: Two strains.
Group F.: One strain.
Group H: One strain.

The Penicillin Used for Testing.

The calcium salt of penicillin II was used throughout the survey. Penicillin II is the type of penicillin in general use for treatment today. The standard samples were kindly supplied to us by Mrs. S. E. R. Baldwin, of the Penicillin Assay Department of these laboratories.

Representative strains of the various groups of streptococci A to H were also tested on blood-agar plates containing varying amounts of penicillin I and also penicillin III; the results obtained did not differ from those found with penicillin II.

Preparation of 6% Horse-Blood Agar Plates Containing Penicillin.

As an example details are given for the preparation of blood-agar plates containing one-twentieth of a unit of penicillin per millilitre.

Nutrient agar in quantities of 150 millilitres in flasks was melted and cooled at 46° C. To nine millilitres of sterile citrated horse blood in test tubes measuring six inches by three-quarters of an inch was added 0·8 millilitre of a freshly-prepared buffered-saline solution containing 10·0 units of penicillin per millilitre. The blood and penicillin were thoroughly mixed, warmed to 46° C. and added to the agar, the tube being then washed out with some of the mixture. The contents of the flask were thoroughly mixed and poured into four-inch Petri dishes (approximately 15 millilitres per dish).

Control Blood Agar Plates.

Blood agar plates without penicillin were prepared as described above and used throughout the tests in parallel with the penicillin plates to control both growth and purity of the cultures tested.

Control Cultures of Streptococci.

Throughout the entire survey, with each lot of cultures tested, we included three control strains. These were as follows: (i) a known penicillin-sensitive strain of streptococcus group A (Rammelkamp, 1942); this strain was obtained by Major P. L. Bazeley of these laboratories from Dr. C. H. Rammelkamp; (ii) a locally-isolated, penicillin-resistant β-hæmolytic streptococcus, not of groups A, B, C or G; (iii) an α-hæmolytic streptococcus which was partially resistant to penicillin. The second and third strains were amongst cultures kindly supplied to us by Major John Perry.

Inoculation of Plates.

The blood-agar plates were dried in the incubator at 37° C. for one hour. Four cultures were tested on each plate in areas marked off with grease pencil. The inoculations were made from eighteen-hour broth cultures with a small loop of number 30 gauge platinum wire over the available medium, the bulk of the inoculum being left in one area; the loop was then stroked over the remaining surface to give single colonies. Throughout the series we have used 20% horse-serum in broth as the culture medium, as many of the strains were revived from the dried state. The only disadvantage of using a serum-broth culture instead of plain broth is that, where the inoculum is heaviest, there may appear with many cultures a small area of hæmolysis due to transferred serum-streptolysin, although there is no visible growth. This area of hæmolysis has no significance in these tests and can be disregarded when the results are being read.

Reading of Results.

The plates were examined after eighteen to twenty-four hours' incubation at 37° C. for evidence of colony growth, and the degrees of growth from "+++" (equal to the control plate) to "–" were recorded.

In some tests the incubation was continued for forty-eight to seventy-two hours. It was found, (i) that when growth was absent at eighteen hours it did not appear on subsequent incubation, and (ii) that when growth was visible at eighteen hours, both growth and hæmolysis increased on further incubation.

Stability of Penicillin in Blood-Agar Plates.

Blood-agar plates containing one-twentieth of a unit of penicillin per millilitre showed no detectable deterioration after storage at 5° C. for twenty-one days or at room temperature (approximately 20° C.) for seven days. Throughout this survey we have used penicillin-blood-agar plates which had been prepared on the day prior to the tests and which had been stored overnight at 5° C.

Results.

On the basis of preliminary sensitivity tests on penicillin-blood-agar plates made with representative cultures of streptococci of groups A to H and the control strains, different concentrations of penicillin for the various groups of streptococci were chosen when the collection of strains was being tested. The sensitivity of the various groups of streptococci together with the number of strains tested and the source of the strains are shown in Table I.

Most strains had been isolated prior to the advent of penicillin treatment, but a few strains which, on being tested, did not differ in penicillin sensitivity from other members of the same group, were isolated during penicillin treatment. These strains were mostly of group A, from human sources (war wounds) and of group B, from bovine sources (mastitis).

---

[1] Since preparing this paper for publication we have noticed that Cowan (1945) has reported using a similar technique for testing the penicillin sensitivity of staphylococci.

TABLE I.

Results of Tests of Growth of Streptococci on Blood-Agar Containing Varied Quantities of Penicillin.

Streptococcus Group.	Source.	Number of Strains Tested. (Total 721.)	Units of Penicillin per Millilitre.							
			0	1/40	1/20	1/10	1/5	1·0	2·5	5·0
A	Human ..	288	+++[1]	–	–					
C	Human ..	118	+++	–	–					
C	Equine ..	12	+++	–	–					
G	Human ..	72	+++	–	–					
H	Human ..	1	+++	–	–					
B	Human ..	102	+++		++[1] to –	+ to –	–			
B	Bovine ..	120	+++		++ to –	+ to –	–			
E	Milk ..	2	+++		+[1]	±[1]	–			
F	Human ..	1	+++		+	±	–			
D	Human ..	4	+++		+++	+++	+++	+++	+	–
	Cheese ..	1	+++		+++	+++	+++	+++	+	–

[1] "+++" means normal growth; "++" means growth with slight inhibition; "+" means growth with considerable inhibition; "±" means a trace of growth only; "–" means no growth.

In all, 721 strains of streptococci of groups A to H were tested for penicillin sensitivity.

It was found (Table I) that all streptococci of groups A, C (human and equine) and G were sensitive to penicillin, and that growth was uniformly inhibited on blood-agar plates containing one-fortieth of a unit of penicillin per millilitre. When plates containing one-eightieth of a unit of penicillin per millilitre were used, as was done with a small series of representative strains, variations in sensitivity were detected, some strains being completely and the rest partially inhibited.

Streptococci of group B from human and bovine sources were all sensitive to penicillin, but less so than strains of groups A, C and G. They varied slightly in their penicillin sensitivity, but the growth of all was inhibited by one-fifth of a unit of penicillin per millilitre, and that of most by one-tenth of a unit.

One representative strain of group H behaved as did those of groups A, C and G.

Streptococci of groups E and F (three only were tested) were sensitive to penicillin, but less so than those of groups A, C and G, and their sensitivity was of the same order as in group B.

Streptococci of group D (not pathogens, as indicated by the source) of human origin, and one from cheese, were resistant to penicillin as compared with strains of streptococci from other groups. The group D strains were completely resistant to 1·0 unit of penicilin and partially resistant to 2·5 units, but growth was inhibited by 5·0 units of penicillin per millilitre. In a large collection of streptococci from pathogenic conditions, previously isolated in this laboratory, no strain of group D which could be regarded as the causal organism of the condition was encountered. Wheeler and Foley (1943), however, report that they isolated nine strains of group D streptococci from human sources amongst several thousand strains of hæmolytic streptococci, and that six strains were associated with fatal cases of peritonitis, septicæmia, meningitis and subacute bacterial endocarditis. Fleming (1929) tested 11 strains of *Streptococcus fæcalis* and found them to be resistant to penicillin. Bornstein (1940) tested 27 strains of enterococci for penicillin sensitivity, and all were resistant. These strains were classified as *Streptococcus fæcalis*, *Streptococcus liquefaciens*, *Streptococcus zymogenes* and *Streptococcus durans*, and according to Sherman (1937), members of these species would fall into Lancefield's group D. Group D strains (a few were tested) have also been shown to be highly resistant to sulphathiazole (Long and Bliss, 1940; Hamilton and Hamilton, 1944). The test strain of the last-mentioned workers was the Lancefield group D strain isolated from cheese. On the basis of penicillin tests, the group D strains from human sources and cheese, and strains of the species classed as enterococci, behave in an identical manner. This evidence, in addition to that of heat resistance and other known physiological characteristics, supports the contention that enterococci are of group D or are closely related streptococci.

Summary.

1. Streptococci (721 strains), mostly from human sources, of groups A to H, have been tested for penicillin sensitivity by a simple penicillin-blood-agar plate technique. Strains of groups A, C, G and H from human sources were all sensitive to penicillin, growth being uniformly inhibited on blood-agar plates containing one-fortieth of a unit of penicillin per millilitre. Representative strains of the serological types of equine streptococci (group C) behaved as did those of group C from human sources. Streptococci of group B from human and bovine sources were all sensitive to penicillin, but less so than those of group A. They varied slightly in their penicillin sensitivity, but the growth of all was inhibited by one-fifth of a unit of penicillin per millilitre, and that of most by one-tenth of a unit per millilitre. Streptococci of groups E and F were of the same order of sensitivity as those of group B. Group D streptococci were resistant to penicillin when compared with strains from other groups. They were partially resistant to 2·5 units of penicillin per millilitre.

2. The penicillin used throughout the present survey was the calcium salt of penicillin II. A few tests were made using penicillin I and penicillin III, and the results obtained did not differ from those found with penicillin II.

3. The method for preparing penicillin-blood-agar plates is described. It was found that these plates showed no detectable deterioration after storage for twenty-one days at 5° C. or seven days at 20° C.

4. This method of testing for penicillin sensitivity is simple, and could be used in any laboratory as a routine test.

Acknowledgements.

We are grateful to Major P. L. Bazeley, O.B.E., and Mrs. S. E. R. Baldwin, of these laboratories; to Mr. E. Munch-Petersen and Mr. D. Murnane, of the Council for Scientific and Industrial Research; to Dr. Hilda Gardner, of the Royal Melbourne Hospital; and to Major John Perry for their cooperation; and also to Mrs. Margaret Green and Miss Barbara Parkin, B.Sc., for their assistance during this survey.

Bibliography.

E. P. Abraham, E. Chain, C. M. Fletcher, A. D. Gardner, N. G. Heatley, M. A. Jennings and H. W. Florey: "Further Observations on Penicillin", *The Lancet*, Volume II, 1941, page 177.

P. L. Bazeley and J. Battle: "Studies with Equine Streptococci. I. A Survey of Beta-Hæmolytic Streptococci in Equine Infections", *The Australian Veterinary Journal*, August, 1940, page 140.

S. Bornstein: "Action of Penicillin on Enterococci and other Streptococci", *The Journal of Bacteriology*, Volume XXXIX, 1940, page 383.

S. T. Cowan: "The Variation in Sensitivity to Penicillin of Strains of the Oxford Staphylococcus H", *The Journal of Pathology and Bacteriology,* Volume LVII, January, 1945, page 145.

M. H. Dawson, G. L. Hobby and M. O. Lipman: "Penicillin Sensitivity of Strains of Non-Hemolytic Streptococci Isolated from Cases of Subacute Bacterial Endocarditis", *Proceedings of the Society for Experimental Biology and Medicine,* Volume LVI, June, 1944, page 101.

A. Fleming: "On the Antibacterial Action of Cultures of a Penicillium, with Special Reference to their Use in the Isolation of B. Influenzæ", *The British Journal of Experimental Pathology,* Volume X, 1929, page 226.

F. Griffith: "The Serological Classification of Streptococcus Pyogenes", *The Journal of Hygiene,* Volume XXXIV, 1934, page 542.

T. R. Hamilton and B. W. Hamilton: "Pathology and Bacteriology of Streptococcus Endocarditis in Relationship to Sulfonamide Chemotherapy", *American Journal of Clinical Pathology,* Volume XIV, October, 1944, page 495.

G. L. Hobby, K. Meyer and E. Chaffee: "Activity of Penicillin 'in Vitro' ", *Proceedings of the Society for Experimental Biology and Medicine,* Volume L, 1942, page 277.

E. V. Keogh, R. T. Simmons and H. Wilson: "Streptococcus Pyogenes (Group A): A Review of 1,341 Strains Collected from Human Sources", *The Australian Journal of Experimental Biology and Medical Science,* Volume XIX, 1941, page 51.

P. H. Long and E. A. Bliss: "Bacteriostatic Effects of Sulfathiazole upon Various Micro-Organisms. Its Therapeutic Effects in Experimental Pneumococcal Infections", *Proceedings of the Society for Experimental Biology and Medicine,* Volume XLIII, 1940, page 324.

C. M. McKee, G. Rake and A. E. O. Menzel: "Studies on Penicillin. I. Production and Antibiotic Activity", *The Journal of Immunology,* Volume XLVIII, April, 1944, page 259.

C. H. Rammelkamp: "A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates", *Proceedings of the Society for Experimental Biology and Medicine,* Volume LI, 1942, page 95.

B. K. Rank: "Use and Abuse of Local Antiseptics on Wounds", THE MEDICAL JOURNAL OF AUSTRALIA, December 16, 1944, page 629.

G. V. Rudd, C. White and H. K. Ward: "Studies on Hæmolytic Streptococci from Human Sources", *The Australian Journal of Experimental Biology and Medical Science,* Volume XVII, 1939, page 25.

J. M. Sherman: "The Streptococci", *Bacteriological Reviews,* Volume I, 1937, page 3.

R. T. Simmons and E. V. Keogh: "Physiological Characters and Serological Types of Hæmolytic Streptococci of Groups B, C and G from Human Sources", *The Australian Journal of Experimental Biology and Medical Science,* Volume XVIII, 1940, page 151.

A. W. Stableforth: "Serological Types of Str. Agalactiæ (Streptococcus Group B) in this and other Countries", *The Journal of Pathology and Bacteriology,* Volume XLV, 1937, page 263.

R. F. Watson: "Sensitivity of Various Serological (Lancefield) Groups of Streptococci to Penicillin", *Proceedings of the Society for Experimental Biology and Medicine,* Volume LVII, 1944, page 65.

S. M. Wheeler and G. E. Foley: "A Note on Non-Group A Streptococci Associated with Human Infection", *The Journal of Bacteriology,* Volume XLVI, 1943, page 391.

FRACTURES OF THE CARPAL SCAPHOID.

By J. R. BARBOUR,
Major, Australian Army Medical Corps.

THIS paper is a general summary of the subject of fractures of the carpal scaphoid, and a review of 124 cases dealt with at a military hospital in the three years preceding March, 1945. The subject is worth some time and trouble, because these fractures are common in the Army age group and mode of life, and they are a real source of time loss and invalidity.

Anatomy of Bone and Fractures.

The scaphoid is the longest bone in the carpus and the only one not roughly cuboidal. It is slender for its length and takes a place in both the proximal and distal rows of carpal bones. The proximal half is cupped into the lower end of the radius by the head of the capitate. The distal half projects past the radial styloid towards the thumb, where the tubercle forms part of the solid butt of the thenar eminence. In a fall on the palm of the outstretched hand, the strong forearm muscles of the young adult hold the wrist rigid, and the thrust, travelling up through the capitate and tubercle of the scaphoid, cracks the latter across the edge of the radius like a stick across one's knee.

The site of the fracture of the bone depends on the position of the wrist and direction of the force at the time of impact. If the force continues after the fracture, it may cause a backward dislocation of the wrist, leaving half the scaphoid and the lunate still grasped in the lower end of the radius—the trans-scaphoid perilunar dislocation. In older people and in women Colles's fractures occur instead, because the wrist hyperextends and the lower end of the radius takes the stress. Examination of dissected specimens, with the softened ligaments still in place, makes the mechanism of these fractures apparent.

The long axis of the scaphoid bone is oblique to both axes of the wrist. If the elbow rests on the table and the forearm is elevated to 45° and the hand supinated until the plane of the palm is at 40° to the table, then the long axis of the scaphoid extends vertically through the tubercle.(1) Because of its position, the bone is subjected to shearing strains in abduction and adduction of the wrist and to screwing strains in flexion and extension. Hence a fracture line across the bone is continually subjected to strain, and it is doubtful whether any fracture of this bone unites without fixation, except fractures involving the tubercle. Subjects with untreated fractures usually report because of the persistence of pain and stiffness after injury, or because of the development of arthritis following non-union. Some fractures are discovered accidentally, and several in the present series came under notice because of wounds or fractures in the vicinity. I cannot say what proportion of ununited fractures fail to cause symptoms, but some appear to stay quiescent, perhaps as a result of fibrous union. However, we must regard the sequence of results in the case of untreated fractures as fracture, non-union and arthritis.

Blood Supply.

The blood supply of the bone is an important factor. It was known that in some cases a dense proximal fragment was seen in the X-ray films, as if this fragment did not take part in the decalcification of the carpus. In 1938 two Americans, Obletz and Halbstein, examined the vascular foramina of 297 scaphoids.(2) These foramina can occur only on the narrow palmar and dorsal surfaces of the bone. In 13% of these they found no foramina proximal to the waist. That meant that in this 13%, fractures of the proximal pole would deprive that pole of its blood supply. Furthermore, waist fractures damaging or just proximal to the vascular foramina would cause avascularity of the proximal half.

It was not surprising that these fractures were slow to unite, though eventually union occurred and the proximal fragment was revascularized. But it was held that, in spite of union, these fractures were attended by a high incidence of arthritis, said to be due to necrosis of the bone and articular cartilage. Hence the slow union was not only of no use, but a disadvantage which could be obviated by early excision of the necrosed fragment before joint damage occurred.(3) It was further held that follow-up of patients who had undergone early excision revealed greatly improved results.

An opposing view is that excision is indicated only when positive X-ray evidence is available of non-union and necrosis, as shown by creeping substitution with irregular mottled density and partial collapse.(4) This view depends on the following observations. The hyperæmic phase following fracture, during which the bones decalcify, was found to be confined to the first two or at the most three weeks. Now cartilage and cancellous bone in a graft are said to survive for three weeks while a new blood supply grows into them. If a fractured scaphoid with an avascular proximal fragment is fixed immediately, it is considered that a new blood supply can grow into the proximal portion from the distal in less than three weeks. However, this occupies the "hyperæmic phase", so that by the time circulation is again occurring in the proximal fragment, the decalcification has ceased and this fragment will remain denser than the rest of the carpus, although it is not necrotic. Brailsford declares that "the temporary retention of calcium by a fragment of bone does not indicate that the fragment is necrotic, it may fuse without any of the secondary changes characteristic of necrotic bone".

Here are two diverse views on a subject which my own experience cannot elucidate at all, because I have not followed sufficient patients for long enough to know the later results. I intend to use conservative measures until convinced of inferior results.

Diagnosis.

Neither clinical examination nor negative X-ray findings immediately after injury can exclude a fracture of the scaphoid. Any person with an injured wrist who has tenderness over the region of the scaphoid and negative X-ray findings should report back for further X-ray examination in three weeks, to exclude a fracture. There is controversy about the number of views necessary for a radiological examination of the bone. Neither an antero-posterior nor a lateral view shows the full profile, so a half-oblique view is taken.

In most places these three views are considered sufficient. The present series includes three cases in which no radiological evidence of fracture was found immediately after injury, but the patients six months later reported with ununited fractures. However, reexamination of the early X-ray films reveals a tiny crack across the waist of the bone in one case.

It must not be forgotten that an injury may cause the onset of pain in the presence of an older fracture. Radiological signs should maks this condition apparent.

Treatment.

Early Treatment (within Two Months of Injury).

Early treatment consists of immediate, efficient and persistent fixation of the wrist by plaster of Paris until X-ray signs of fracture have disappeared. Fixation should be immediate, because the initial bone reaction should be the most potent force to bridge the gap, and it is possible that the life of an avascular proximal fragment depends on this early bridging. Fixation should be efficient, because the bone is so placed that it is peculiarly subject to strains on slight wrist movements with resultant refracture or persistent hyperæmia of the fracture site. Fixation should persist to obliteration of radiological signs of fracture, because absence of subperiosteal callus makes this the only true criterion of healing.

Before obliteration of the fracture, union by fibrous tissue will occur. Operation has been performed in cases in which no X-ray signs of union were apparent, and at operation the two halves of the bone have been found firmly adherent. Such a finding does not mean that operation is not necessary to obtain consolidation, though it may explain why some patients with ununited fractures remain symptomless in light occupations.

In 75 cases in which the fracture was treated within two months of injury, only two fractures did not unite; both these failures were due to inadequate treatment. One of the patients repeatedly broke his plaster cast during the first four months, and then "incomplete union" was found in spite of a further eight months' fixation. A year after discharge he reported with established non-union. In the other case wide separation and rotation of fragments were present, and a graft was performed after four months of fixation. Splinting was continued for another four months. Later this patient too reported with non-union. Apparently the graft had given a deceptive blurring of the fracture line, obscuring a persistent wide separation demanding much longer fixation. Yet both men have good function so far and are performing full duty. The non-union was discovered by a check X-ray examination, not because of symptoms.

The time necessary to secure union varied according to the site of fracture, the degree of separation of fragments and the incidence of avascularity of the proximal fragments (see Table I).

From these tabulated results one can see that the rise in time necessary to secure union varied directly with the degree of separation at the fracture site. It is also obvious that there was an all-round increase in time of union for proximal pole fractures compared to those through the waist of the bone.

I do not think the times of union are unusually long, but they may be. However, I believe that they are considerably longer than they should be. Half the patients were examined during the last year, when particular attention was given to splinting, and in these an average reduction in the time of splinting before union was achieved was obvious. Having seen the extraordinary variety of broken-down plaster casts arriving with patients in transit, I was stirred to apply at least a local remedy, and I believe it is showing dividends. "Plastering" may appear an adult form of amusement: but unless it is also a practised,

Table I.

Showing Time of Union in Relation to Site and Type of Fracture.

Site and Type of Fracture.	Number of Cases.	Average Time in Plaster Cast. (Weeks.)	Results.	Medical Category in Service.
Tubercle	5	15	All united.	One temporarily "B".
Waist:				
Cracks..	20	15	All united.	No change.
Separations	31	28	Thirty united. One ununited.	Eight "B" and one "D". "A."
Dislocations	2	26	One united. One ununited.	"A." Temporarily "B".
Avascular proximal fragment (included above)..	4	50	All united.	No change.
Proximal pole:				
Cracks..	3	22	All united.	No change.
Separations	3	30	All united.	Two temporarily "B".
Dislocation	1	47	All united.	"B."
Avascular proximal fragment (included above)	2	41	All united.	Two "B".

Table II.

Showing Number of Fractures Uniting in Each Month of Treatment.

Type of Fracture.	Months of Treatment.								
	Two.	Three.	Four.	Five.	Six.	Seven.	Eight.	Nine.	Over Nine.
Tubercle (5)	1	2		2					
Waist (50)	7	5	9	3	7	7	4	3	5
Proximal pole (7)	1				2	1	1	1	1

reasoned procedure, it is unreliable. It is a mistake of the first order to say "anyone" can put on a plaster cast; "anyone" would probably perform an appendicectomy much better.

Late Treatment (more than Two Months after Injury).

Some of the patients examined later were merely suffering from delayed union, and reported because of persistent pain after injury. It is interesting that in two cases in which plaster fixation was begun nine months after injury, union was obtained in thirty-six weeks. Other patients reported because of the development of arthritis, one as long as ten years after a remembered "sprain", and in many of these cases the time of the injury had been forgotten. Three ununited fractures were found accidentally in X-ray pictures taken for other reasons, such as wounds of the forearm.

These cases present a variety of radiological changes. (*a*) Delayed union may occur, as shown by decalcification of the fracture line with areas of rarefaction—so-called cysts—along it. (*b*) Established non-union with considerable absorption of bone and sclerosis along the fracture line may be present. Undoubtedly some of the reported cases of bipartite scaphoid have been cases of non-union, the dense, eburnated surfaces making a false joint. (*c*) Arthritic changes may be present, varying from a mere sharpening of the radial styloid to an apparent narrowing of the radio-scaphoid joint space. I have seen no spread of arthritic changes through the neighbouring carpal joints.

The treatment in cases of delayed union is fixation in a plaster cast without operation. The analysis shown in Table III will indicate this. It is wrong to presume that operation was performed in the worst cases. A close examination of records and X-ray films has shown that it would be more correct to consider that the cases in which operation was undertaken were a cross-section of these "delayed union" cases. Operation was not undertaken after prolonged fixation had failed to secure union.

The most striking feature of Table III is the time required to secure union—an average of twenty-five weeks, which is similar to the times stated in Table I. It would seem to suggest that delay in treatment up to nine months does not greatly affect the time taken by the fracture to unite. Another interesting feature is that some delay in treatment has exposed these patients to a high operation rate with poor results.

From this review it seems that one may expect few patients with delayed union to have much chance of cure after nine months without treatment. Among 32 cases, only three were selected for plaster fixation and none of these fractures united. The treatment of patients reporting after nine months' delay would appear to be allocation to lighter work and fitting of a moulded leather support. This support is laced on and extends for three inches above and one inch below the radial styloid, being held in position by a strap between the thumb and forefinger. Its power to relieve a weak, aching wrist is surprising. Operation, unless for arthrodesis, is of no value in the presence of arthritis. Table IV shows the results of various forms of treatment in 32 cases. Again, operation is not an index of severity in this series.

Arthritis is an actual or potential complication of all fractures of the scaphoid, but particularly so in cases in which treatment is delayed for months. If X-ray examination reveals delayed union with early arthritis, it is reasonable to seek union by fixation in a plaster cast, because all symptoms may be due to lack of union.

TABLE IV.

Showing Treatment and Results in Thirty-two Cases after a Delay of More than Nine Months.

Fractures Treated or Untreated.	Number of Cases.	Results.	Medical Category in Service Later.
Untreated (includes leather splints) ..	23	—	3 "A", 13 "B", 7 "D".
Treated	9	Non-union.	3 "B", 6 "D".
Plaster cast only 3	—	—	1 "B", 2 "D".
Operation .. 6	—	—	2 "B", 4 "D".
Graft .. 3	—	—	2 "B", 1 "D".
Excision of proximal fragment 3	—	—	3 "D".

However, a combination of non-union and arthritis is a different problem. Operation and lengthy fixation in a plaster cast are the only chance of securing union—and a very uncertain chance it is. Should the measure succeed and symptoms persist because of the arthritis, the patient has not benefited at all. Excision of the proximal fragment has been used to mitigate the non-union and arthritis. My results after excision indicate persistent disability and discharge of the patient from the service as medically unfit.

Hence I consider that delayed union with arthritis should be treated by fixation in a plaster cast to secure union. But arthritis with non-union should be treated by a change to lighter work and if necessary the fitting of a leather support.

Conservative Treatment.

The conservative method of seeking union is by the application of a plaster cast. I shall describe the method as used at this hospital.

To prevent skin irritation the forearm and hand are first covered with zinc cream containing 10% *Liquor Picis Carbonis*. Then the point of the elbow is rested on the table, the hand being raised and the palm in the vertical plane. The natural tendency is to hold the hand supinated, and if the cast is applied in this position pressure occurs on the ulnar styloid on pronation of the hand for ordinary use. A plaster slab is placed along the radial border of the forearm and wrapped about the thumb to extend just distal to the metacarpo-phalangeal joint. The bandages are wrapped round from the upper part of the forearm to just below the metacarpal heads dorsally and the distal palmar crease ventrally. A wad of bandage is gathered into the palm to make a thick "buffer" here. The lower edge of the cast is moulded back until the distal palmar crease and metacarpal heads just show. By this means a "thick-ended" plaster is produced with the full thickness vertical to the skin surface. When the plaster is just setting the patient opposes the tip of his thumb and forefinger, and the surgeon holds the dorsal and palmar surfaces together with a gentle pressure. When the plaster has dried, to coat it with shellac and place a strip of leather across the palm make it more durable.

The advantages of this type of cast are many. The ointment minimizes skin troubles. The slab allows selective strength, while there is a thin portion along the ulnar

TABLE III.

Showing Results of Treatment in Seventeen Cases of Delayed Union, Treatment having been Given from Two to Nine Months after Injury.

Mode of Treatment.	Number of Cases.	Average Time After Injury. (Months.)	Average Time for Union. (Weeks.)	Result.	Medical Category.
Plaster cast only	10	5·5	25	Union in all.	5 "A", 4 "B", 1 "D".
Operation	7	4·5	—	Non-union in all.	3 "A", 1 "B", 3 "D".
Graft 1	—	—	—	—	"A."
Drilling 3	—	—	—	—	2 "A", 1 "D".
Excision of proximal fragment 3	—	—	—	—	1 "B", 2 "D".

side for easy removal. The thick, square lower ends prevent a gradual loosening by fraying, and the mass in the palm is too thick to be softened in ordinary use. In practice this cast regularly lasts a month, being as efficient at the end of that time as when new.

Some writers advocate metal splints,(5) others use cellulose casts. Some do not immobilize the first metacarpal at all and claim to obtain good results.(6) However, the commonest method is still the use of plaster of Paris, and the results are satisfactory with careful supervision. The necessity of changing the cast, and its liability to loosening, both add an extra risk of damage to the healing fracture. One cannot be too careful in removing plaster casts and handling the limb while X-ray films are taken. Unguarded movement of the limb while out of its plaster cast places an early union in jeopardy.

Conduct of a Case.

The man may and should do light work, but must keep the plaster dry. He must be constantly watched for loosening of the cast. It seems unsatisfactory to treat patients at their units, even if they are reporting every week.

The plaster cast should not need changing more than once a month, but it must be changed immediately any loosening occurs. In many cases it is sufficient to have X-ray films taken every two months, though a monthly check is desirable. When the fracture is considered healed and the plaster cast is finally removed, the man should report back in three weeks' time for a check X-ray picture. This precaution is made necessary by the difficulty of interpreting X-ray films taken with a slight variation of angle. One picture may give a perfect view of the fracture line and show incomplete healing; a month later a picture at a slightly different angle may suggest that obliteration of the line is almost complete. So the cast is removed and active use of the limb encouraged. Usually the healing process will continue to completion; but occasionally the unduly favourable appearance from a picture taken obliquely across the fracture line will lead to too early mobilization followed by rarefaction, and if this is undetected, it may result in non-union. Three such cases occurred in the present series.

Sometimes during the course of treatment X-ray films show the fracture line obscured in part of its extent, the appearances suggesting that union is occurring, but no appreciable change in the appearance takes place for several months. That is, delay in union occurs during the fixation of the fracture. I consider this is really delay in calcification.

The commonest cause is undoubtedly that the plaster casts are allowing sufficient movement to keep the fracture hyperæmic. If this cause can be excluded, then either a skin infection or the mild atrophy which sometimes occurs under plaster, may delay calcification. It is worth while removing the cast and allowing light use of the hand for two weeks. Another X-ray film then will probably reveal increasing union, but if not, the plaster cast should be reapplied. I chanced on this apparently dangerous practice some time ago. A certain waist fracture remained in a state of delayed union for four months. It was then decided to graft the fracture, and so the plaster cast was removed. A mild folliculitis was present, and it was a month before the skin was quite clear and ready for operation. A check X-ray film then showed that consolidation was complete and operation quite unwarranted. I have tried the above course several times since then, and on each occasion rapid consolidation of the fracture has followed. Though this procedure should be used with caution, I now believe it should always be carried out before an operation is performed for delayed union occurring during fixation in a plaster splint.

The union of a fracture of the scaphoid is not always the end of the treatment. It is not always accompanied by a free and painless wrist joint, and successful treatment cannot be claimed on the score of union alone. The man may still need a change to lighter work or a leather support because of early arthritis precipitated by the original injury.

In most cases natural use will restore full movement within two weeks of the removal of the plaster splint. However, on two occasions in the present series the wrist was manipulated under anæsthesia to break down persistent adhesions.

Operative Treatment.

Operative treatment consists of methods to secure union, such as drilling, grafting or fixation by a screw, and excision of part or the whole of the bone to prevent or alleviate arthritis.

Excision is the oldest procedure, and as late as 1944 an article appeared advocating early total excision as the treatment of choice for many fractures.(7) I have had no experience of this, nor of the latest modification, total excision and replacement by a ready-made vitallium replica. I cannot believe that either is necessary. Early excision of an avascular proximal fragment is advocated by Watson-Jones. My own observation, admittedly over a short period, shows satisfactory results after union has been secured by fixation in a plaster splint. Late excision of a proximal fragment in non-union was performed six times in the present series; the shortest time after injury was seven months. Five of the six patients were discharged from the service soon after operation, and one remains on light duty (B class). I cannot believe that this procedure is worth while.

Drilling is employed to break down the sclerosed edges in non-union or fibrous union, and then a fresh attempt at union is permitted in a plaster splint again. In the present series drilling was apparently done to expedite the consolidation of delayed union. Table V shows that it was performed five times, and the interval after fracture varied from three to twelve months. Three fractures united and two did not. I consider that drilling alone has little to recommend it. The introduction of a graft as internal fixation to assist the plaster fixation would appear better.

Grafting can be performed in two ways. The older method is to cut down on the bone and expose the fracture site as well as the tubercle. The blood supply to the bone, which is provided by the neighbouring soft tissues, may be considerably damaged by this technique. By a more recent method the graft is introduced through a tiny incision over the tubercle. The hand is placed in a rest holding it at 40° off full supination and the forearm at 45° to the horizontal. The long axis of the scaphoid is now vertical, and a drill can be introduced in this plane. The progress is checked by X-ray films and then a graft is driven along the drill hole.(8) (9) The operations in this series were performed by the older method, and the grafts were taken from the tibia or the lower end of the radius. Of six fractures, only two united. Two failures were caused by too early removal of the plaster cast, when the drilling and graft caused a deceptive blurring of the fracture line. Later, rarefaction and non-union occurred. Therefore fixation must be continued for long enough to allow such a period to pass—apparently for at least four months after operation.

A third type of operation is being used elsewhere in cases of delayed union. A bone screw, to secure apposition and internal fixation without the use of plaster, is inserted into the fragments. I have no experience of this method of treatment.

The summarizing of these results gives a rather depressing picture. Operative attempts to secure union in seven cases of delayed union succeeded in four instances, possibly five. In four cases of non-union, all attempts failed. Six excisions of proximal fragments resulted in the discharge as medically unfit of five of the patients. It is interesting that in some cases in which operation was performed for delayed union, the fragments were found firmly adherent across the fracture line. One may presume that these were either cases of fibrous union, or more probably, cases of delayed calcification of a united fracture.

The Indications for Operation.—In many of the cases in which operation was performed in the present series, I con-

TABLE V.

Showing Operations and Results in Seventeen Cases.

Operation.	Type of Fracture at Operation.	Delay Before Treatment.	Length of Plaster Fixation.		Result.	Medical Class.
			Before Operation.	After Operation.		
Excision of proximal fragment.	Waist:					
	Non-union and arthritis	30 months.	—	—	—	D
	Non-union, arthritis, avascular proximal fragment	18 months.	—	—	—	D
	Non-union, avascular proximal fragment	9 months.	5 months.	—	—	D
	Non-union and arthritis	Years.	—	—	—	D
	Proximal pole:					
	Non-union, with avascular proximal fragment	4 months.	3 months.	—	—	B
	Non-union, rarefaction of proximal fragment	2 months.	6 months.	—	—	D
Drilling	Waist:					
	Delayed union, avascular proximal fragment	—	12 months.	4 months.	Union.	D (multiple fracture)
	Delayed union (distal)	6 weeks.	5 months.	1 month.	Union.	A
	Non-union	6 months.	—	4 months.	Non-union.	D
	Delayed union	6 months.	—	6 months.	Non-union.	A
	Proximal pole. Delayed union	3 months.	—	12 months.	Union.	A
Grafting	Waist:					
	Non-union and avascular proximal fragment	12 months.	5 months.	6 months.	Non-union.	D
	Delayed union, avascular proximal fragment	—	4 months.	4 months.	Union.	B
	Delayed union, rotation fragment	—	3 months.	3 months.	Non-union.	B
	Delayed union	3 months.	—	3 months.	? Union.	A
	Proximal pole:					
	Non-union and arthritis	36 months.	—	9 months.	Non-union.	B
	Non-union and avascular proximal fragment	11 months.	—	3 months.	Non-union.	B

sider operation was either unnecessary or of doubtful assistance. This review has convinced me that the indications for operation are few. Non-union without arthritis is an indication, as union may prevent later degeneration of the joints. But patients presenting with non-union may be presumed to have arthritis unless they present in one of three ways: (*a*) if non-union has developed during treatment, or (*b*) if persistent pain after injury has led to their reporting for treatment, or (*c*) if a fresh injury leads to the detection of non-union before arthritis has begun. It seems wrong to seek union in the presence of arthritis which one would expect to be progressive. So I regard operation for union as prophylactic and not a palliative for arthritis. If I was asked how successful operation was in the presence of non-union, I could only give a pessimistic answer. Delayed union is the commonest indication for operation. I wonder whether it is not erroneous, though I previously regarded persistent delay in union during fixation in plaster as the chief reason for operative assistance to union. Now I would regard these cases as due to delay in calcification rather than as due to a failure in union. I have explained how I treat such fractures in the discussion under the heading "The Conduct of the Cases". If the removal of the plaster cast and the clearing of skin infection do not result in improvement within six weeks, then a graft should be placed across the fracture line and fixation in a plaster splint continued for at least four months. I do not consider that the X-ray appearance of early arthritis in delayed union should stop one from attempting to obtain union of the fracture.

Early excision of an avascular proximal fragment I regard as an operation of doubtful value, and prefer to wait for true signs of necrosis and non-union. These signs were quoted earlier as "positive X-ray evidence of non-union and creeping substitution with irregular mottled density and partial collapse". Crippling arthritis not relieved by a moulded leather support is an indication for radio-carpal arthrodesis. The indication for operation may be stated therefore as follows: (i) non-union without arthritis; (ii) delayed union persisting after conservative measures have failed to overcome it; (iii) non-union with established evidence of a necrotic proximal fragment; and (iv) crippling arthritis.

Conclusions.

1. Scaphoid fractures have a strong tendency to unite if fixation is continued long enough. This observation is supported by the high proportion of union in all cases in which early treatment is given, and the union obtained even after delay for as long as nine months. It appears that the failures can be attributed to inadequate treatment.

2. In the absence of established non-union, two factors only would appear to prevent union: (i) inadequate treatment; (ii) operative interference. Separation, comminution, rotation and avascularity of fragments do not stop union, though they cause it to be slow, and may produce arthritis and a poor result.

3. The rate of healing has been shown to be affected by the site of fracture, the degree of separation of fragments and the condition of the blood supply to the proximal fragment. I am sure that the maintenance of adequate fixation is another factor.

4. Delay in treatment up to nine months has not affected the rate of healing or the result. This I consider the most surprising fact revealed in this analysis of results.

5. Persistent delay in completion of healing during fixation in plaster of Paris may be due to delay in calcification of the united fragments for various causes.

6. Non-union can be associated with a negligible disability and union with sufficient disability to lead to discharge of the patient from the service. In view of this observation and of the results of operation to secure union, it seems that operation was of little if any assistance in the present series; it was probably the reverse. Excision used to mitigate old non-union and arthritis resulted in only one man's remaining in the service, and he on permanent light duty.

7. Better results would have followed (*a*) a higher standard of plaster cast; (*b*) closer supervision, especially during change of plaster casts; (*c*) the substitution of prolonged fixation for operation in all cases of delayed union; (*d*) the use of moulded leather splints instead of operation for non-union with arthritis. It is recognized that the use of the service medical grading as an estimation of results is poor compared with a personal review of the cases.

Acknowledgement.

I wish to thank the Director-General of Medical Services for permission to publish this paper.

References.

(1) J. R. Armstrong: "Closed Technique for Fixation of Fractured Carpal Scaphoid", *The Lancet*, Volume I, April 26, 1941, page 537.

(2) B. E. Obletz and B. M. Halbstein: "Non-Union of Fractures of Carpal Navicular", *The Journal of Bone and Joint Surgery*, Volume XX, 1938, page 424.

(3) R. Watson-Jones: "Fractures and Joint Injuries", Third Edition, page 564.

(4) B. E. Obletz: "Fresh Fractures of Carpal Scaphoid", *Surgery, Gynecology and Obstetrics*, Volume LXXVIII, January, 1944, page 83.

(5) E. L. Farquharson: "Splint for Fracture of Carpal Navicular", *The Journal of Bone and Joint Surgery*, Volume XXIV, 1942, page 922.

(6) R. F. Jaekle and A. G. Clark: "Acute Fractures of Carpal Scaphoid", *Surgery, Gynecology and Obstetrics*, Volume LXVIII, April, 1939, page 820.

(7) M. G. Henry: "Fractures of Carpal Scaphoid Bone in Industry and in Military Service", *Archives of Surgery*, Volume XLVIII, April, 1944, page 278.

(8) A. A. Butler: "Bone Pegging Carpal Scaphoid", *Proceedings of the Royal Society of Medicine*, Volume XXXV, October, 1942, page 760.

◆

PLACENTA PRÆVIA.[1]

By R. H. SYRED,
The Royal Hospital for Women, Sydney.

I SHOULD like to commence my paper on *placenta prævia* by stating that the general practitioner is wise not to examine his patient *per vaginam* unless she is in a well-equipped hospital with full facilities for treating hæmorrhage. Immediately any hæmorrhage is either reported or seen by the doctor, the patient should be transferred to hospital.

Emergency Treatment.

The importance of vaginal plugging as a first-aid treatment cannot be over-emphasized. The patient can be sent many miles to hospital after this first-aid treatment. The plugging is carried out after pubic toilet has been performed. The patient empties her bladder or it is catheterized. Cotton-wool pledgets are soaked in saline solution or 5% "Dettol" solution and thoroughly wrung out, and the vagina is systematically packed—posterior fornix, lateral fornices and anterior fornix in this order. The effect is mechanical and compresses the placenta against the uterine wall, fulfilling the general principle of compression of the bleeding point. As an alternative, the vagina may be packed with four-inch rolled gauze soaked in saline or "Dettol" solution, the gauze being packed firmly into the vagina as in the case of the wool pledgets. Iodoform gauze may also be employed, and I have known a patient who was admitted to hospital with her vagina packed with strips of sheeting, who subsequently had an uneventful convalescence.

Examination in Hospital.

On her admission to hospital everything is in readiness for the patient to be treated for shock. Blood typing and examination of the blood for the presence or absence of the Rh factor are carried out, and transfusion set and pooled human serum are ready for administration.

The initial vaginal examination should be carried out by the doctor fully gloved and gowned and with an assistant at hand to administer an anæsthetic if the need should arise. The following instruments should be sterilized and in readiness for use: (i) Auvard's self-retaining speculum; (ii) one pair of Willett's scalp traction forceps (full size); (iii) one pair of multitoothed tenaculum forceps; (iv) one roller bandage and a one-pound weight for axis retraction if necessary. The bed available should preferably be a Williams's bed, provided with a rod and pulley at the end for the necessary traction. Once the diagnosis has been confirmed, a decision must be made there and then whether the treatment is to be carried out *per vaginam* or by Cæsarean section.

At this point I should particularly like to say that expectant treatment is carried out only if the patient is at rest in bed in a large hospital under careful supervision. With this treatment the patient is not examined vaginally, but is kept in bed continually. Blood typing and examination for the Rh factor are carried out immediately. In my opinion this treatment is justifiable only in the case of an elderly *primipara* when the fœtus is bordering on viability. The general rule of "active treatment once the diagnosis is made" should be carried out.

Central Placenta Prævia.

The ideal treatment is Cæsarean section under general anæsthesia. The ideal conditions for Cæsarean section are as follows: (i) when viability of the child is assured—that is, the patient is approaching the thirty-sixth week of gestation; (ii) the patient's colour is good, her general condition is satisfactory, and only moderate vaginal hæmorrhage is present.

I should like to add that in the case of *multiparæ* it is best to avoid Cæsarean section, as the cervix is usually soft and dilates very easily. Patients unsuitable for Cæsarean section are those who are blanched and have lost a considerable amount of blood. Treatment of patients in this group is the immediate transfusion of serum and blood. If the os is dilated to admit one finger, then the vagina should be plugged or packed to control blood loss, and twenty-four hours later the packing should be removed. Frequently a *placenta prævia* which has been central is now found to be marginal with dilatation of the os to admit two fingers or more. Treatment then is by rupture of the membranes, and the application of Willett's scalp traction forceps if the head can be easily grasped and pushed into the pelvis. If the head is not readily accessible, then bipolar version should be performed and one-pound traction should be applied to the leg in a half-breech presentation. The half-breech presentation provides an extremely efficient wedge, it controls the blood loss and materially assists in the dilatation of the cervix. I may add that as the vagina is tightly packed, difficulty in voiding urine may occur and the patient may frequently require to be catheterized.

Against Cæsarean section it must always be remembered that the maternal mortality rate is raised by an additional 10% by the performance of this operation, and hence it is necessary to perform it in an efficient operating theatre with an efficient operating team. It must be remembered that serious complications can affect the patient's convalescence; among these are paralytic ileus, intestinal obstruction, post-partum hæmorrhage associated with obstetric shock, pulmonary embolus, pulmonary œdema. These are just some of the difficulties associated with convalescence.

In post-partum hæmorrhage following Cæsarean section, treatment, apart from the use of oxytocic drugs, is by further blood transfusion.

With regard to pulmonary embolism, I should like further to stress the fact that a patient should never be propped up with more than two pillows for the first forty-eight hours after operation, and that when Cæsarean section is performed for *placenta prævia* there is a great risk of pulmonary embolism in the first week of convalescence.

I should now like to quote the histories of two patients with central *placenta prævia* treated in hospital.

On her admission to hospital the patient had no vaginal bleeding, but gave a history of loss sufficient to soak two pads prior to her admission. A vaginal examination was carried out; the os was dilated to admit one finger and central *placenta prævia* was diagnosed. No hæmorrhage occurred immediately after the examination, but within twenty minutes copious hæmorrhage began, blood spurting from the vagina in a four-inch stream. The vagina was immediately packed with five rolls of four-inch gauze soaked in 5% "Dettol" solution, the hæmorrhage was immediately controlled and a transfusion of serum and blood was given. Within one hour the patient was perfectly well, her colour was good and her pulse rate was 80 per minute. As fœtal heart sounds were present, a classical Cæsarean section was performed, a further transfusion of blood being given on the operating table. Convalescence was uneventful. Sulphonamide drugs were given as a prophylactic measure. Unfortunately the infant died six hours later from anoxæmia.

The second patient was a *multipara*. Free hæmorrhage was occurring from the vagina. On examination of the patient the os was dilated to admit three fingers, and central *placenta prævia* was present, the head being high. A bipolar version was performed; traction was applied to the leg and the patient delivered herself in three hours of a living infant. The third stage was not delayed, and the patient had no post-partum hæmorrhage.

---

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 29, 1945.

In the performance of bipolar version the placenta is pushed to one side, the head is pushed up and the back is found by the external hand; the breech is then pushed down into the pelvis.

In the treatment of post-partum hæmorrhage I should like to comment first of all on the use of cotton-wool pledgets. Frequently these dry into a hard mass and their removal can lacerate the vaginal mucosa. Secondly, *accouchement forcé* is to be deplored, as damage to the cervix will cause further shock to the patient and tend to produce post-partum hæmorrhage. The patient should expel the fœtus by her own unaided efforts. With regard to blood transfusion, if more than one litre of blood is given, then the patient's blood should be examined for the Rh factor and the appropriate type given. I have seen two patients die after being given Rh-positive blood, although the blood was compatible.

Marginal Placenta Prævia.

In the treatment of marginal *placenta prævia* vaginal plugging is necessary if the cervix is dilated only to admit one finger. If the cervix is dilated to admit two fingers or more, rupture of the membranes should be carried out if the head is easily accessible and can be pushed down into the pelvis. Willett's scalp traction forceps should be applied, or an efficient substitute is the multitoothed volsellum, which is ideally shaped and can grasp the scalp securely. One-pound traction is then applied; a greater weight will tear the instrument from the scalp.

The Champetier de Ribes bag is now of academic interest only. In the treatment of *placenta prævia*, if it is used, it must be carefully inserted through the cervix, and one must remember that if the bag slips down into the vagina it may conceal hæmorrhage behind it.

Lateral Placenta Prævia.

In the treatment of lateral *placenta prævia*, frequently rupture of the membranes is sufficient to control hæmorrhage. If this is not successful, then the application of Willett's scalp traction forceps, or version as in marginal *placenta prævia*, may be necessary.

Post-Partum Hæmorrhage.

In all cases of *placenta prævia* one must be careful to avoid any post-partum hæmorrhage; as the placenta is in the lower non-contractile portion of the uterus, and as the placenta has partially separated to cause the hæmorrhage of *placenta prævia*, it will be readily understood that the placenta may be retained and cause post-partum hæmorrhage. If the third stage is delayed at all, a speedy manual removal of the placenta should take place before the patient becomes exsanguinated.

Sepsis.

Sulphonamide drugs should be administered to guard against any sepsis which may follow vaginal or uterine manipulation.

◆

REPORT ON A SERIES OF CASES OF SINUSITIS TREATED BY CHEMOTHERAPY AT AN AUSTRALIAN GENERAL HOSPITAL.

By R. H. BETTINGTON,
Major, Australian Army Medical Corps,
AND
G. K. VINCENT,
Major, Australian Army Medical Corps.

SIXTY cases of sinusitis are here reported, five acute and 55 classed together as subacute or chronic. Our criterion of the designation subacute or chronic has been the performance of at least four proof punctures, without improvement in the patient's condition. The five acute cases are included because the patients were the first five with that type of sinusitis admitted to the hospital after we had decided on the experiment, and because they are amongst the 21 cases mentioned in the bacteriological report (Table I). A large number of acute infections of this type have been treated since, and the results obtained with sulphamerazine were so uniformly good that we included no more of them.

Bacteriological Findings.

The most striking points arising out of this survey are that in only one case (I) was there no pathogenic type of staphylococcus or streptococcus; in only four (I, XI,

TABLE I.
Bacteriological Findings.

Organisms Present.	Case Number.																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Bacillus fæcalis alkaligenes																		x			
Bacillus aerogenes									x										x		
Bacillus coli communis									x	x		x					x			x	x
Bacillus coli anaerogenes					x																
Micrococcus catarrhalis			x																		
Hæmophilus influenzæ								x												x	
Bacillus anthracoides								x													
Bacillus pyocyaneus											x										
γ-streptococci												x									
Hæmolytic streptococci (group A)									x											x	
Staphylococcus albus					x		x						x								
Staphylococcus aureus (hæmolytic)		x	x	x	x	x	x	x	x	x		x		x		x	x	x	x		x
Staphylococcus aureus (non-hæmolytic)				x	x		x				x	x			x				x		
Streptococcus viridans	x		x						x	x				x		x					
Diphtheroids	x	x	x				x	x	x			x		x		x			x		

Akta-Vite

Nutritive Food Tonic

Each 10 grammes (approximately 2 teaspoonfuls) contains not less than:

Vitamin A	2,000 Int. Units
Vitamin B1	300 Int. Units
Vitamin C	300 Int. Units
Vitamin D	1,000 Int. Units

Together with dextrose and calcium phosphate in a chocolate base.

- For the treatment of those vague conditions of sub-normal health—nervous exhaustion, sleeplessness, anorexia, gastro-intestinal atony with chronic constipation.
- In debility following severe illness, and for those cases where treatment necessitates restriction of the normal diet.
- During pregnancy and childhood.
- As a stimulant for sub-normal lactation.

In 5 and 10 oz. jars and 40 oz. tins.

NETT WEIGHT
10 OZS
AKTA-VITE
REG. TRADE MARK
NUTRITIVE FOOD TONIC
CONTAINING 4 IMPORTANT VITAMINS
A
B1
C
D
Nicholas Product
NICHOLAS PTY LTD MELBOURNE VIC

A NICHOLAS ETHICAL PRODUCT

Oestrogenine Compound

A MIXED HORMONE FORMULA
PERFECTLY TOLERATED

THYROID
ANTERIOR PITUITARY
CALCIUM
HEXOESTROL

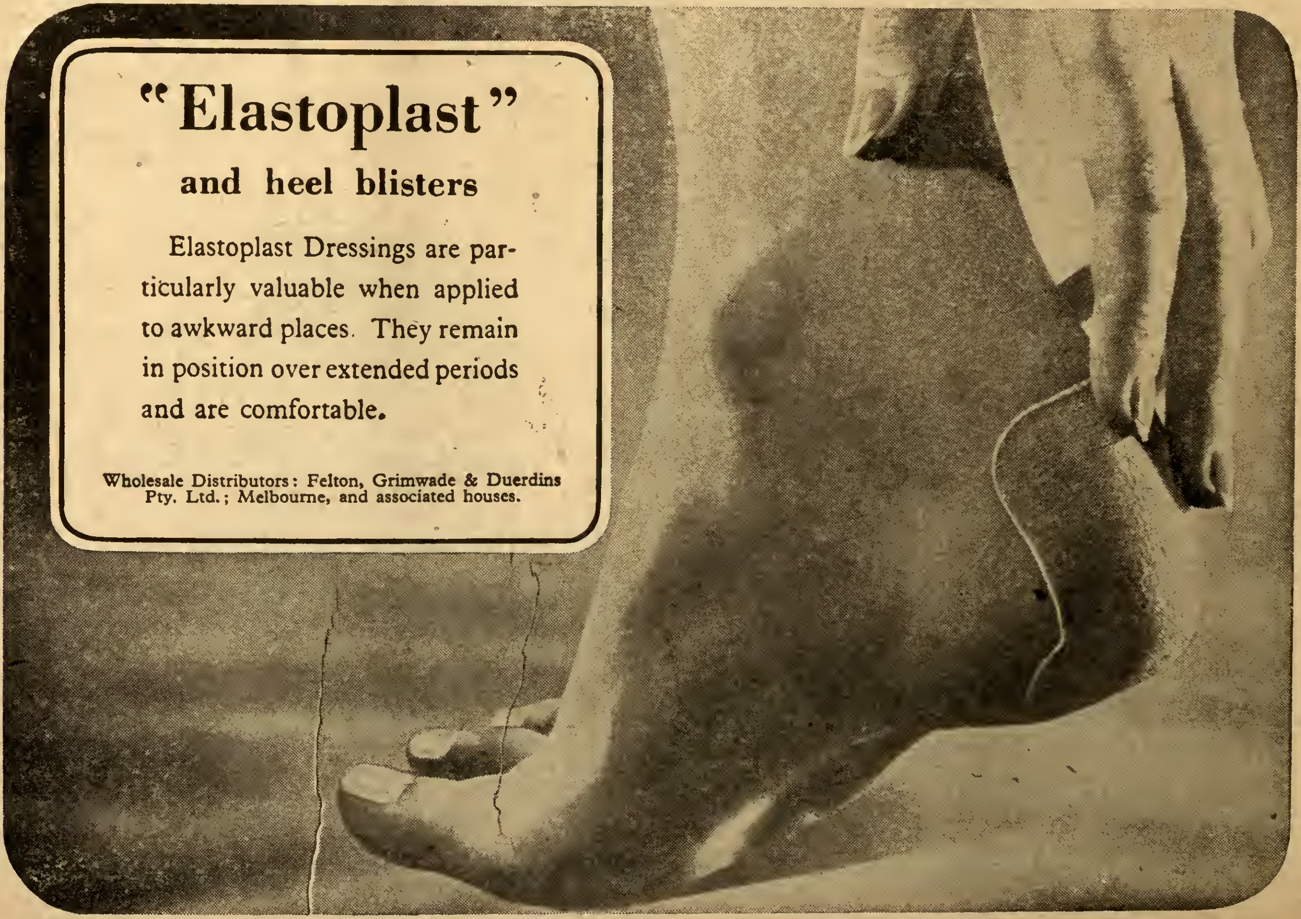
IN MENOPAUSE
AMENORRHOEA FRIGIDITY
GENERAL HORMONE DEFICIENCY
As a powerful ENDOCRINE TONIC

DOSAGE: TWO, THREE OR FOUR TABLETS PER DAY.

PRICES TO PATIENTS: BOTTLES OF 25 TABLETS, 3/3 Retail
BOTTLES OF 100 TABLETS, 10/9 Retail

Fawns & McAllan

8a CASTLEREAGH ST., SYDNEY. 140 QUEEN ST., MELBOURNE. 25 CENTRAL ST., HOBART.
97 WILLIAM ST., PERTH.



"Elastoplast"

and heel blisters

Elastoplast Dressings are particularly valuable when applied to awkward places. They remain in position over extended periods and are comfortable.

Wholesale Distributors: Felton, Grimwade & Duerdins Pty. Ltd.; Melbourne, and associated houses.

XIII, XV) was no hæmolytic organism found; and the hæmolytic *Staphylococcus aureus* was absent in only five cases. The pathogens mentioned are all sensitive to penicillin and sulphonamide drugs. It is possible that the other organisms found are either secondary invaders or normal inhabitants of the nose.

X-Ray Findings.

X-ray pictures were taken in nearly all cases, and the appearances varied from slight mucosal thickening to complete dulness. While this was a help in diagnosis, we found the results of no value in determining whether chemotherapy would be effective or not.

Chemotherapy.

The methods of treatment adopted are as follows. On their admission to hospital patients were given menthol inhalations and menthol and paraffin nasal drops as a routine measure. After four proof punctures the "Army B" course of sulphamerazine was given. This consists of 25 grammes in five days, the doses all being given at intervals of eight hours, as follows:

First day: two doses of 6·0 grammes and 3·0 grammes.
Second day: two doses of 3·0 grammes and 3·0 grammes.
Third day: two doses of 2·0 grammes and 2·0 grammes.
Fourth day: two doses of 2·0 grammes and 2·0 grammes.
Fifth day: two doses of 1·0 gramme and 1·0 gramme.

Sulphamerazine was given in nearly all cases owing to its availability. In a few cases only sulphadiazine was used, but not often enough for an opinion to be formed as to any relative advantage in using the latter.

Patients were put to bed entirely for the first three days of the course and allowed up for short intervals on the last two. They were required to take at least five pints of fluid a day and to keep their own fluid balance charts. The urine was tested at least three times a day so that it could be kept alkaline by requisite doses of potassium citrate or sodium citrate.

In only one case was it necessary to suspend treatment through the effect of the drug on the kidneys. This patient had had two similar courses in two months, both for acute exacerbations of a chronic sinusitis. The first course was of sulphamerazine and the second of sulphadiazine. On both occasions he complained of lumbar pain on the second day, his urinary output dropped rapidly and the urine became acid. Each course was suspended at once.

In a few cases in which the urinary output fell noticeably, one dose was postponed for twelve hours. It was never found necessary to do more than this.

Two or three days after the completion of the course the antra were proof-punctured again. If after another four proof punctures no improvement was found, then penicillin treatment was commenced. The method adopted was as follows. A proof puncture was performed, and after the saline irrigation had been completed, the cannula was left in place; 1·5 to 2·0 millilitres of penicillin solution were pushed in slowly with a small syringe every three hours, the patient lying with the affected side down and staying there for half an hour after each treatment. The strength of the solution varied between 50 units and 5,000 units per millilitre.⁽¹⁾

At present we are using 500 units per millilitre and have found no advantage in using high concentrations.

The treatment was carried out every three hours for forty-eight hours; then the cannula was withdrawn, and another proof puncture was performed two days later.

Types of Cases.

In six of the cases the patients had previously undergone radical antrostomy on the affected side, and three of them required another radical operation owing to the closure of the intranasal openings and reinfection.

It has become our habit to give the above course of sulphamerazine in all cases of reinfection after radical antrostomy and as a post-operative treatment in all our own similar cases if the convalescence is at all slow.

In every case in which the drainage was good and the antral openings patent (a number of these are not recorded in the present series), the antra became perfectly clean in a short time. The subsequent history of our patients who have undergone radical operations shows that any tendency to a lengthy convalescence is brought to an abrupt stop by this procedure.

We found that the appearance of the antral lining, in the cases in which operation was ultimately performed, was unaltered by the chemotherapy. We judged this by our previous experience of patients operated on without preliminary chemical treatment.

Results.

Five patients suffering from acute sinusitis all recovered after the "Army B" course of sulphamerazine. Of 55 patients suffering from subacute or chronic sinusitis, 15 underwent radical antrostomy, 28 were cured after sulphamerazine treatment only, 10 recovered after penicillin treatment, and two are still under treatment. The two patients still under treatment have both had sulphamerazine and penicillin and their condition has improved; but still their antra are slightly infected. They have been advised to undergo operation, but prefer to postpone their decision for the present.

The 15 patients who underwent radical antrostomy all had long histories, and most of them had severe nasal polyposis.

Five patients had nasal polypi removed, and subsequent chemotherapy cleaned the antra entirely. Three patients required submucous resection of the septum as a preliminary.

In the cases in which the antra were clear after chemotherapy, further proof puncture was performed from one to two weeks after the regular treatment had been finished. In six cases this check was not carried out. Of the patients whose condition was so checked, four were found to have had a recurrence and all required additional chemotherapy. One of them eventually underwent a radical antrostomy. This patient was found at operation to have a large infected dental cyst in the incisor region, which communicated with the antrum and probably was the original cause of the antritis.

Difficulties and Dangers.

The administration of all sulphonamide drugs has an element of danger. Sulphamerazine has slight nauseating effects, but has a tendency to crystallize in the kidneys in acid urine. For this reason no patient should take large doses without being at rest and keeping a careful fluid balance chart and a record of urine reactions. This is difficult unless the patient is in hospital. Patients who have had a recent course of a sulphonamide drug are more likely to show toxic reactions, so every patient should be questioned closely about previous therapy and toxic effects.

There appear to be no dangers attached to the penicillin therapy, but it is awkward to have a cannula in the nose for forty-eight hours. This again makes it almost obligatory to keep the patient in hospital. In a number of cases in which the cannula became loose, we had to strap it to the cheek.

Conclusions.

1. The predominant infecting organism in acute, subacute and chronic sinusitis is the hæmolytic staphylococcus.

2. Modern chemotherapy in the form of sulphamerazine and locally applied penicillin is of great value in treating acute and subacute sinusitis.

3. Little benefit can be expected from the same treatment in chronic sinusitis when pronounced nasal and antral polyposis is present.

Acknowledgements.

We wish to thank Major G. C. Halliday and Major G. V. Rudd for their valuable help and cooperation. Major Rudd states that he handed the work over to Sister E. Ritchie, who was at that time attached to the pathology department. The Director-General of Medical Services has given permission for the publication of this paper.

Reference.

(1) L. P. Garrod: "Action of Penicillin on Bacteria", *British Medical Journal*, January 27, 1945, page 107.

AN ANALYSIS OF DEFORMITIES AMONG RECRUITS, WITH REMARKS ON SUB-STANDARD TYPES.

By W. E. ROBERTS,
Surgeon-Commander, Royal Australian Navy,
Sydney.

THE requirements for the naval service are many and diverse. The majority of candidates examined were in their teens and destined for the seaman and stoker branches. The remainder were examined for writer, medical, supply and other branches. Some of the older applicants represented the engine-room artificer, shipwright and motor-mechanic branches.

In the series under review 2,090 recruits were examined, and the ages ranged from seventeen to thirty-five years, the greater number being in their teens; 1,010 were found to be unfit from all causes, and of these 306 were sub-standard or below naval physical standard, and a further 180 possessed some deformity. These deformities rendered them unfit for any branch of the service (see Figure I). With regard to those classed as sub-standard or below naval physical standard, it must be remembered that for the seaman branch of this service a high standard is required.

The principle of acceptance is whether the prospective recruit will meet the requirements necessary to make him an efficient ordinary seaman. On this, if there is no demonstrable disability, and provided that weight, height and chest development (mean) are average and that the muscle tone is good, rests the decision (see Table I). Of the above factors, I regard muscle tone as the most important, and maintain that if a youth cannot support his own weight he should not be passed as fit. This applies equally to the other and less strenuous branches of the service, although in some particular cases a certain allowance can be made.

All recruits have sooner or later to serve at sea under varying conditions of climate, and during war are likely at any time to be subjected to stresses which will try their physical endurance to the utmost. Therefore, when he is examining young recruits, it behoves the medical officer to bear these conditions in mind and to make his decisions accordingly.

Among the candidates under review who were classed as below naval physical standard, it was obvious that many had never been drilled or had never taken any form of exercise, the muscle tone in all cases was poor, and quite a number were well under the standard weight and chest development for their age (see Figure II). Among these, as was to be expected, were some with various abnormal curvatures of the spine (kyphosis, scoliosis, lordosis). The recruits with fixed or structural scoliosis are considered separately and are not included under the category "below naval physical standard"; they are shown under the detailed review of deformities (see Figure I), and all were aged under twenty-one years.

I am of the opinion that an important factor in these cases is that of diet. In many it is unsatisfactory in regard to both quantity and quality, and in addition meals are often taken at irregular intervals so that the whole metabolism suffers. This, occurring during the formative period of life, renders the adolescent more liable to deficiency diseases and to various deformities of the skeletal system. Inadequate diet and lack of exercise must be held responsible for recruits classed as "substandard" and for some of those with scoliosis, although in the latter condition anterior poliomyelitis also plays a part. A balanced diet taken at regular intervals, adequate exercise and the avoidance of undue fatigue during adolescence are indicated if such cases are to be prevented in the future. To achieve this, greater supervision of children in the home and at school will be necessary, and parents should endeavour within their means to provide properly balanced meals at regular intervals.

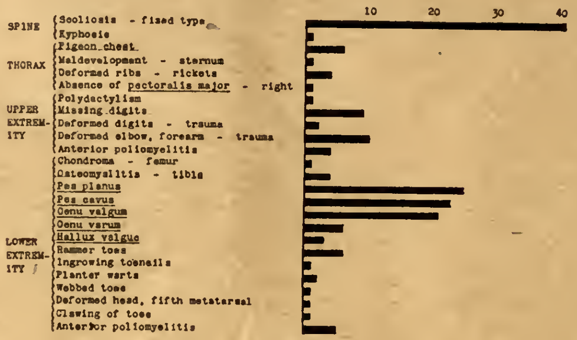


FIGURE I.

In this series of 1,010 unfit recruits, aged from seventeen to thirty-five years, 306 were below naval physical standard, and 180 had deformities—total, 486, or 48% of the unfit and 23% of recruits examined. Of all recruits examined, 8·6% had deformities; 2% had scoliosis. Scoliosis was present in 4·1% of the unfit, and accounted for 22·7% of deformities. Foot deformities represented 35% of all deformities, *pes planus* representing 13·8%. Many of these deformities could have been prevented by due care during adolescence—this applies specially to scoliosis. Some of the recruits with *pes planus* could have been improved by appropriate exercises, and although not fit for the seaman branch, would have been accepted for some other branch of the service if they had so desired. Among the unfit were many who were rejected for more than one cause (some had scoliosis); these are not shown here.

TABLE I.

Age Period. (Years.)	Number Examined.	Number Unfit.	Percentage of Unfit.		Percentage of Recruits Examined.	
			Sub-standard or Below Naval Physical Standard.	Deformities.	Sub-standard or Below Naval Physical Standard.	Deformities.
17 to 20	500	191	45·0	24·0	17·1	9·0
17 to 26	400	143	25·0	12·5	8·9	4·4
17 to 26	1,000	237	20·0	15·0	4·7	3·5
17 to 35[1]	2,090	1,010	30·2	17·8	14·5	5·7
17 to 40	2,986	1,292	24·7	16·6	12·0	7·1
17 to 40	2,542	1,201	29·0	16·8	13·3	7·9

[1] Series reviewed in this article.

Figure II.

Chart of age, height and weight in use at the recruiting centre, Sydney. In using this chart, the medical officer allows for a range of seven pounds more or less in weight

MALES.											FEMALES.										
Height.	17	18	19	20	21	22	23	24	25	26	Height.	18	19	20	21	22	23	24	25	26	27
5 3	8 8	8 10	8 12	9 0	9 4	9 8	9 12	10 4	10 8	10 12	4 9	7 4	7 5	7 6	7 10	7 11	7 12	7 13	8 1	8 2	8 3
5 4	8 10	8 12	9 0	9 4	9 8	9 12	10 2	10 6	10 10	11 0	4 10	7 5	7 6	7 7	7 11	7 12	7 13	8 0	8 2	8 3	8 4
5 5	8 12	9 0	9 2	9 6	9 10	10 2	10 6	10 10	11 0	11 4	4 11	7 6	7 7	7 8	7 12	7 13	8 0	8 1	8 3	8 4	8 5
5 6	9 0	9 2	9 4	9 12	10 2	10 6	10 10	11 0	11 4	11 8	5 0	7 7	7 8	7 9	7 13	8 0	8 1	8 2	8 4	8 5	8 6
5 7	9 4	9 6	9 8	10 2	10 6	10 10	11 0	11 4	11 8	11 12	5 1	7 8	7 9	7 10	8 0	8 1	8 2	8 3	8 5	8 6	8 7
5 8	9 8	9 10	9 12	10 6	10 10	11 0	11 4	11 8	11 12	12 0	5 2	7 9	7 10	7 11	8 1	8 2	8 3	8 4	8 6	8 7	8 8
5 9	9 12	10 2	10 4	10 10	11 0	11 4	11 8	11 12	12 0	12 4	5 3	7 10	7 11	7 12	8 2	8 3	8 4	8 5	8 7	8 8	8 9
5 10	10 2	10 6	10 8	11 0	11 4	11 8	11 12	12 2	12 4	12 8	5 4	7 11	7 12	7 13	8 3	8 4	8 5	8 6	8 8	8 9	8 10
5 11	10 6	10 10	11 0	11 4	11 8	11 12	12 2	12 4	12 8	13 0	5 5	7 12	7 13	8 0	8 4	8 5	8 6	8 7	8 8	8 10	8 11
6 0	10 10	11 0	11 4	11 8	11 12	12 2	12 4	12 5	13 0	13 4	5 6	7 13	8 0	8 1	8 5	8 6	8 7	8 8	8 10	8 11	8 12
6 1	11 0	11 4	11 6	11 10	12 0	12 4	12 8	12 12	13 4	13 8	5 7	8 0	8 1	8 2	8 6	8 7	8 8	8 9	8 11	8 12	8 13
6 2	11 4	11 6	11 10	12 0	12 4	12 8	12 12	13 4	13 8	13 10	5 8	8 1	8 2	8 3	8 7	8 8	8 9	8 10	8 12	8 13	9 0

Average Australian Male, 21 Years old.
Height = 5 feet 7·5 inches.
Weight = 10 stone 8 pounds = 148 pounds.
Chest = 34 inches.

Average Australian Female, 22 Years Old.
Height = 5 feet 3·5 inches.
Weight = 8 stone 3·5 pounds = 115·5 pounds.
Chest = 33 inches.

In this connexion it may be of interest to quote American opinion in regard to scoliosis. In the United States of America medical authorities apparently place a lateral deviation of the spine in a different category from that of true scoliosis (curvature with rotation of vertebræ), and they accept for general service recruits with a lateral deviation of one inch or less from the mid-line, if mobility and weight-bearing are good. They class as non-acceptable recruits with a lateral deviation from the mid-line of more than two inches, and also those with a curvature (kyphosis, scoliosis, lordosis) of a degree sufficient to interfere with the wearing of uniform and equipment.(1) It would appear from the foregoing that the United States of America authorities do not differentiate between the two main types of scoliosis, structural and functional; recruits with the latter type, unless it is severe, are accepted by us.

Deformities of the Feet.

The deformities of the foot found are shown graphically in Figure I.

The human foot has become greatly modified for the performance of two divergent functions, and evolutionary changes over the years have produced the present-day foot. In standing, the foot must provide a stable support for the body weight—its static or passive function. In walking, it must, in addition to supporting the body weight, provide a resilient spring or lever by which the body can be propelled forward—its dynamic or active function. These objects are catered for by the architectural arrangement of a number of small, spongy bones grouped together in the form of arches. In addition to conferring resiliency on the foot, the arches serve for the dispersal of forces applied to its plantar surface, and they provide necessary space for the passage of nerves and vessels forward towards the sole.(2) The efficiency of these arches depends on the shape of the bones and the ligaments of the foot and on the muscles of the foot and the leg, especialy the latter. The tone of these muscles is most important, since if they are weak, extra strain is thrown upon the ligaments and finally upon the bones themselves.

It will be seen, therefore, that anything that impairs the nutrition of the muscles will be ultimately manifested in one or other of the varying disabilities of the feet. The average normal foot should be supple and mobile and possess spring, and its range of movement as follows: plantar flexion, 45°; dorsiflexion, 10° to 15°; inversion, 60°; eversion, 15°. The instep should be moderately concave and the tibial muscles capable of supporting the arch and allowing it to flatten. The outer border of the foot must be flat and its intrinsic muscles competent to maintain the correct function of the toes. On the plantar surface there should be a reasonable layer of subcutaneous fat to provide padding for the heel and the metatarsal heads. The body weight should be evenly distributed between the heel and the ball of the foot, and the length-breadth ratio should be 2·7:1·0.

Foot Types.

There are three types of foot: (i) average—mobile, of sufficient musculature and correct shape; (ii) narrow—associated as a rule with a poor physique, deficient in spring, predisposed to planus deformity; (iii) broad—a useful foot as a rule, with mobility limited by its shape and thickness. Of the above types, the narrow foot is more likely to break down during training.

It was found at this centre that 68% of the feet examined were of the average type, 19% were narrow and 13% were broad.

Examination of the Feet.

The general appearance is noted, especially the colour of the skin as indicating the condition of the circulation; a bluish-red tint, acrocyanosis, denotes some vascular disturbance, and in these cases a history of chilblains is often obtained. Next, the condition of the skin is investigated. Excessive sweating (hyperidrosis) is found in many nervous disorders. A dry skin (anidrosis), which is inclined to form scales, indicates some endocrine deficiency, for example, hypothyreoidism.

Obvious defects, such as *hallux valgus*, hammer-toe, clawing of toes, and missing digits can be seen at a glance, and if the toes are separated, soft corns and tinea are easily detected.

The recruit is then given the following instructions: (i) "Stand, face me, feet together." (ii) "Rise on toes." (iii) "Heels down." (iv) "Move toes." (v) "Bend your right knee, show the sole of your foot." (vi) "Repeat the manœuvre for the left foot." (vii) "'Double' in the standing position." (viii) "Stop." (ix) "Face me, spread your legs wide apart." If the foregoing routine is carried out, any deformity will be detected and the degree of *pes planus* (if present) evaluated.

I have described the routine employed at this centre, because in my opinion it is most important that the feet of the male recruit should be as nearly as possible perfect. To some extent this is in accordance with the standard laid down in the United States of America: "Individuals with defects of the feet which would prevent them from taking proper training will not be classified for general military service."

Of the other deformities listed, *pes cavus* and *genu valgum* merit some attention, the former because it can in some instances be more disabling than *pes planus*, the latter for its association with *pes planus*.

Summary.

1. One hundred and eighty deformities in recruits were recorded and analysed; scoliosis predominated and was followed closely by *pes planus*.

2. Three hundred and sixty sub-standard recruits (below naval physical standard) are discussed. Many of these deficiencies, as well as some of the cases of scoliosis, could have been prevented had more attention been paid to diet and exercise during adolescence.

3. The importance of a thorough examination of the feet is stressed.

4. A chart (age, height, weight—Table I) is included, and also a comparative table (Table II), showing the percentage of sub-standard types and deformities, including those reviewed in this article.

Acknowledgements.

My thanks are due to Surgeon-Captain W. J. Carr, C.B.E., F.R.A.C.P., Director of Naval Medical Services, for permission to publish this article, and to Writer D. Bull, Women's Royal Australian Naval Service, for typing the manuscript and making fair copies of Figure I and Tables I and II.

References.

(1) Report of the Commission of Physicians appointed to examine the requirements for admission to the Army, Navy and Marine Corps, United States of America, 1944.

(2) W. Mercer: "Orthopædic Surgery", Eleventh Edition.

YOUNG DR. STORCH OF ADELONG.

By RICHARD T. KENNEDY,
Sydney.

IN the year 1857 William Balman discovered a quartz reef shot with gold on Adelong Creek, New South Wales. Prior to that Adelong was merely the site of a few prospectors' huts surrounded by unexplored and thickly timbered hills. Avid prospectors there had been since 1853—men who talked in pennyweights of gold. True, there was a roughly-erected shanty where mine host Colin McDonald dispensed potent grog, weevily flour and other essentials; but as for a town, not a sign was there, and by 1856 the alluvial gold was fast petering out, and the Adelong Creek was on the verge of being once again the lonely haunt of the kangaroo, the emu and the black.

William Balman's discovery that there were thick veins of gold in the white quartz rocks that backboned the tree-clad hills brought fame and fortune to many "reefers" for many years; it changed the talk from pennyweights to ounces; it brought a thriving township of two thousand souls that rapidly overawed the primitive shack of host McDonald; and it brought the discoverer, Balman, a short day of lucrative glory before a dynamite explosion crippled him for life! In addition, the newly-found and golden reef brought its moiety of medical men. They came by pack-horse and by wagon. They brought not pick nor shovel wherewith to crack the yellow lucre from its craggy bed. They brought only their little carpet bags replete with scalpel, bleeding sets, saws and the inevitable copies of Ferguson's "Surgery". Among the earliest to settle down at Adelong goldfield were Dr. Charles A. Dibdin, Dr. Fred Homan, Edward Gregory, M.R.C.S., and B. Storch, M.D.

Dr. Dibdin, son of the famous playwright and actor, Thomas Dibdin (1771-1841), and grandson of the more famous nautical lyrist, Charles Dibdin "The Elder" (1745-1814), was probably first in the field, moving there from his previous practice at Goulburn. Dr. Fred Homan followed later. Dr. Dibdin and Dr. Homan have figured in a previous article.(1)

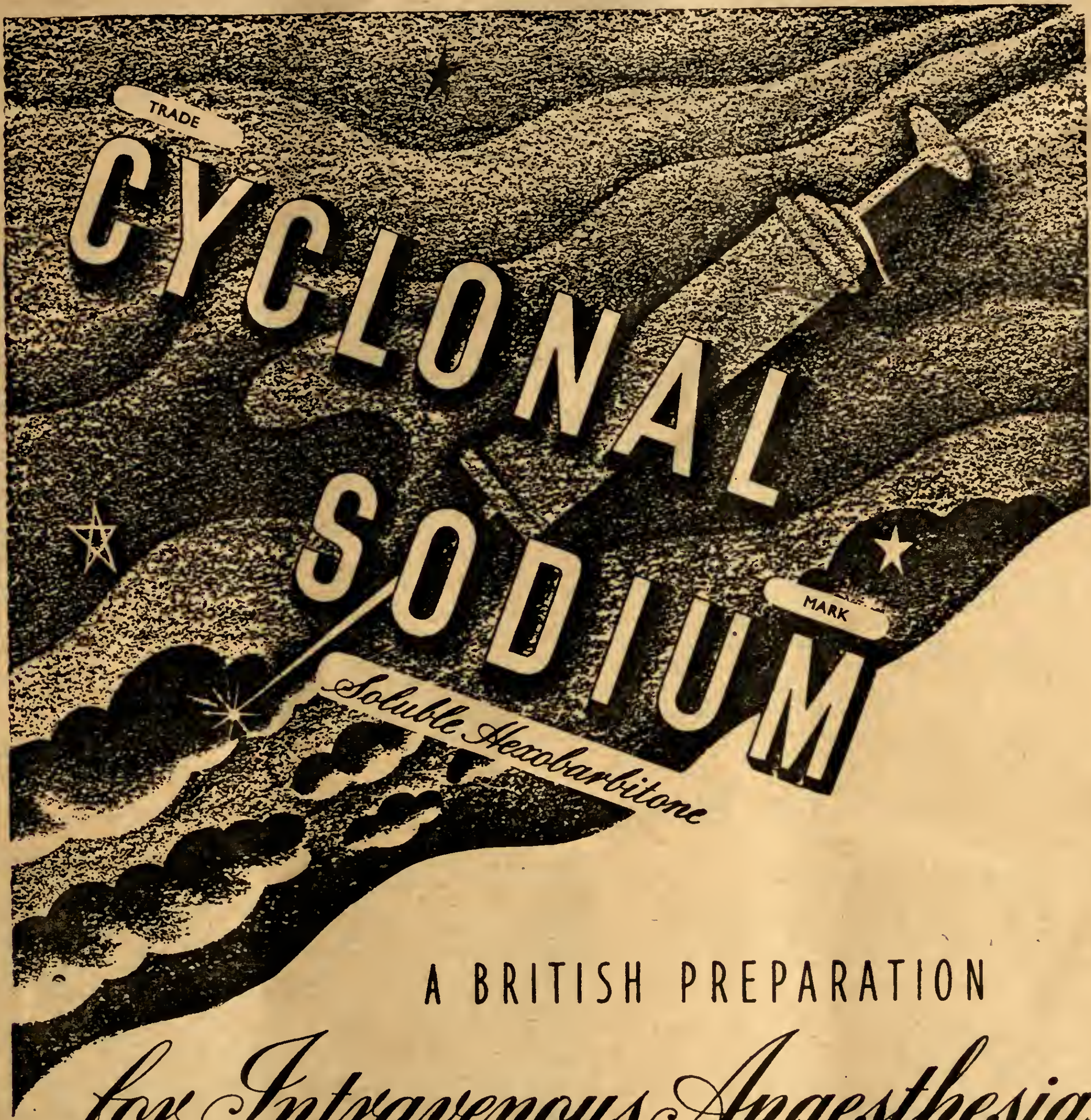
It is proposed here to mention briefly the discoverable highlights in the goldfield career of Dr. B. Storch. Unhappily more is discovered of him in his obituary notice than is to be found in the journalistic archives of the time. He was apparently a bitter rival of the hail-fellow-well-met Charles Dibdin. Storch was of Prussian nationality, a stubborn, determined man and the antithesis of the mercurial Dibdin. Storch was twenty-six years of age when he came to Australia.

It is not hard to believe that the stolid Storch, unused to the rough and tumble of a mining camp, should become the butt of bar-room practical jokes. Upon one occasion the Prussian doctor was summoned urgently to the scene of a bolting horse, with what appeared to be a helpless lady upon its back. The horse was allowed to bolt just as the doctor arrived breathlessly on his own nag. All he could see was a woman in a coloured dress careering over the hill to an obvious and fatal fall. Poor Storch, with pathetic fervour, went hell-for-leather after the damsel in distress, only to find on topping the hill that the bolting horse had thrown off its burden, a roll of striped and coloured diggers' blankets! The practical joke had been arranged by the popular Dr. Dibdin to disconcert his rival.

Will Carter, in an old copy of *The Sydney Morning Herald*, tells us that the rivalry came to a head in the following manner:

> After a supposed insult in a dance room, Storch, egged on by Frank Templeton, Charlie Lewington and other of the fresh lads of the time, demanded satisfaction with horse pistols at close range. When the word was given both men fired and the charge of raspberry jam, secretly arranged, spattered their faces, Storch exclaiming with arms in the air: "Blut! Blut! I am shot, mein Gott, I am shot!"

It was Storch's good fortune to win an unusual court case in the matter of recovery of fees. The newspaper of the time records the details.


TRADE
CYCLONAL
SODIUM
MARK
Soluble Hexobarbitone

A BRITISH PREPARATION

for Intravenous Anaesthesia

Supplied in

Boxes of 6 x 0.5 gm. ampoules with 6 ampoules distilled water.

Boxes of 6 x 1 gm. ampoules with 6 ampoules distilled water.

Boxes of 25 x 1 gm. ampoules with 25 ampoules distilled water.

M&B

MAY & BAKER (AUSTRALIA) PTY. LTD., 5 PHILLIP STREET, SYDNEY

ANGESIL

MIGRAINE

HEADACHE

NEURALGIA

MENSTRUAL PAIN

INFLUENZA

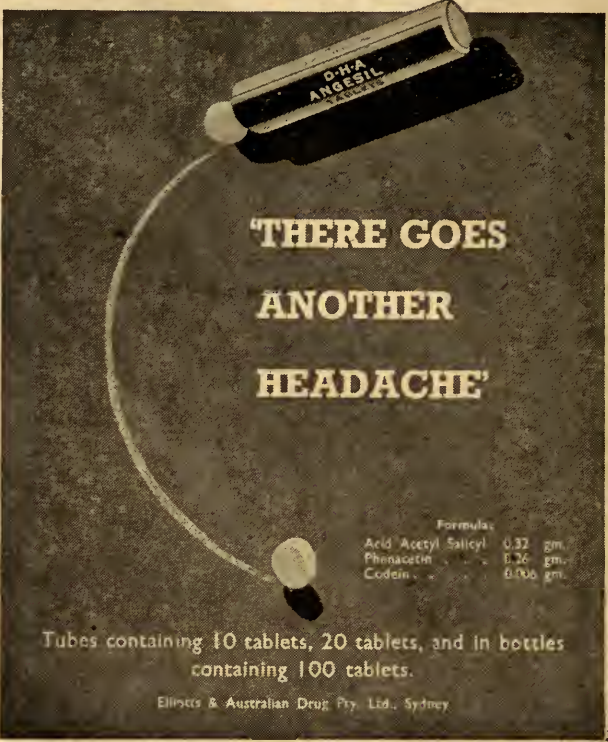
COLDS

ARTHRITIC PAIN

DENTAL EXTRACTIONS

RHEUMATIC PAIN

GENERAL ANALGESIC



'THERE GOES ANOTHER HEADACHE'

Formula:

Acid Acetyl Salicyl 0.32 gm.
Phenacetin . . . 0.26 gm.
Codein . . . . 0.006 gm.

Tubes containing 10 tablets, 20 tablets, and in bottles containing 100 tablets.

Elliotts & Australian Drug Pty. Ltd., Sydney

MIGRAINE

HEADACHE

NEURALGIA

MENSTRUAL PAIN

INFLUENZA

COLDS

ARTHRITIC PAIN

DENTAL EXTRACTIONS

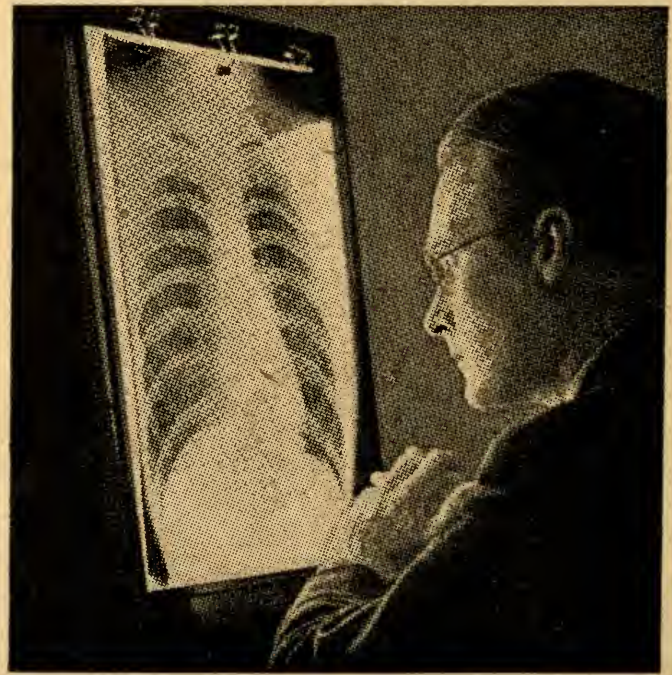
RHEUMATIC PAIN

GENERAL ANALGESIC

Achieving Perfection
in **RADIOGRAPHY**
with—

ILFORD
X-RAY FILM

Is the result of exacting scientific research conducted to produce a film combining chemical and mechanical qualities essential to radiographs of the highest possible diagnostic value. ILFORD X-RAY FILM gives delicate gradation and brilliant contrast with uniform quality.



ILFORD LTD., LONDON

Distributors:

WATSON VICTOR
LIMITED
9-13 Bligh Street, Sydney and at MELBOURNE, BRISBANE, ADELAIDE, PERTH, NEWCASTLE. WELLINGTON, NEW ZEALAND.

> Adelong Court of Requests.
>
> Sept. 6th, 1861.
>
> Only one case was defended viz. Storch *v.* Fletcher in which Dr. Storch sought to recover an amount for professional services rendered to a child of Mr. Fletcher's mate, Thomas Hardy. The grounds of the plaintiff were that Mr. Fletcher was the person who called him to attend the child, the child being first attended in Fletcher's house and the accident having occurred through one of Fletcher's children and he [Fletcher] stating that he would see the charges paid.
>
> Defendant admitted the accident was occasioned by his son, that the patient was first attended in his house, denied ever becoming responsible for the professional fees inasmuch as he had told Dr. Storch to look to Hardy for them.
>
> His Worship animadverted on the case and ultimately decided that Fletcher should pay £3 3s. with costs, the balance to be recoverable from Hardy.

"Going to court" was one of the minor occupations of those quarrelsome days, and the doctor was not always so lucky in his cases as was Dr. Storch. There was, for instance, the famous case brought to court by Dr. Storch's rival, Edward Gregory, M.R.C.S., for the detention of his property. It bears repetition from the columns of *The Wynyard Times* of Tumut of February 18, 1862.

> On Tuesday last Messrs. J. B. Sharp and G. J. Meynink, Esqs., occupied the Bench and found their time consumed in hearing a charge preferred by Edward Gregory, Surgeon, against Mrs. Maria Watson, late postmistress, of illegally detaining his property, to wit, one tumbler, one pair of blankets, one feather pillow and one chamber utensil of more than ordinary convenience of a total value of 40s. 9d. Mrs. Watson had been Dr. Gregory's erstwhile landlady. Mr. Gregory conducted his own case, Mr. Robertson appearing for the defendant. The doctor, of course, endeavoured to represent to the Bench that the defendant had been to him a veritable "jerry-diddler", but on hearing Mr. Robertson's explanation that the blankets and pillow had been offered but refused, that the tumbler was already returned to and received by the plaintiff and that the last article had that morning been returned by being publicly deposited under the doctor's window, their worships very wisely dismissed the case.

But let us return to Dr. Storch, who no doubt enjoyed the discomfiture of his rival as much as everyone else on those crude and boisterous fields. Storch was a failure in his Australian adventure. This is only too realistically and dramatically revealed by the most extraordinary circumstances surrounding his death. The means he took to end his life are Nipponese in their stark self-cruelty. Here is *The Sydney Morning Herald's* abridged version.

> The City Coroner held an inquiry yesterday (May 1, 1867), at the European Hotel, Castlereagh Street, respecting the death of Dr. B. Storch, who committed suicide by stabbing himself in the heart with a knife. Constable Larkin stated that whilst on duty in Castlereagh Street on Thursday night about twenty minutes to nine, he received information that a man had stabbed himself at the European Hotel. He went to the hotel and in one of the bedrooms he saw the body of the deceased lying on its back. There was a wound in deceased's left breast and a quantity of blood on his shirt and clothes. He found a dagger lying on a washstand close to the bed on which the body was lying, the dagger being partly covered with blood. On the body he found a letter, a bill, a small penknife, a razor, a purse and a small package labelled "Poison". In the room he found a valise which contained surgical instruments; a carpet bag and a small box were also pointed out to him as belonging to deceased. He saw no signs of a struggle having taken place in the room. During the last fortnight he had occasionally observed deceased walking about Sydney.
>
> Frederick Summerhof, landlord of the above hotel, stated that deceased was known to him by the name of Dr. Storch. Deceased went to his house a fortnight ago and told him (witness) that he had been turned out of the house where he had last been staying as he had no means. Deceased also stated that the proprietor of the house had kept a gold watch of his worth eight guineas for two weeks' board. Deceased begged of him to let him stop at the hotel for eight days or a fortnight until he could get something to do. Deceased said he expected some money from some party up the country and he consented to allow him to remain. During the time that deceased had been at his house he had been very temperate in his habits. He never drank more than two nobblers a day. Deceased told him he had never in his life been in such reduced circumstances as he was then in and during the last three or four days deceased became despondent and low spirited and was irregular in his habits. On Thursday morning deceased said he was going to leave as he had taken lodgings in Elizabeth Street to commence practice under the patronage of Mr. Tiddeman, chemist. The last time he saw deceased alive was about twelve o'clock on Thursday. He then appeared to be cheerful. On deceased's carpet bag is a brass plate on which is engraved "B. Storch, M.D., Physician and Accoucheur". Deceased was a native of Prussia and had been twelve years in the colony, during nine years of which he had resided at Adelong. From information he received he went into deceased's bedroom and found him as described by Constable Larkin. He never heard deceased threaten to destroy himself; he had never received any money from him; deceased told him his instruments were valuable.
>
> Alexander M. C. Scott stated that he had boarded at the European Hotel since Saturday last and occupied the same bedroom as deceased. Deceased never said he would commit suicide nor was there anything in his manner to lead him to think he was insane. He never saw deceased under the influence of drink.
>
> Henry Tiddeman, chemist, of Pitt Street, stated that he had been acquainted with deceased for about two months and had seen him almost daily during that time. He was low spirited and complained of having no funds. He heard deceased say about three weeks ago that if he did not get something to do he would destroy himself. He last saw deceased alive three days ago and gave him a shilling.
>
> Dr. Oscar Wilke stated that he saw the body of deceased about half an hour after eight o'clock on Thursday evening. He found a wound about three-quarters of an inch wide on the left side. The body was lifeless and must have been so half an hour. Deceased's arms were lying close to his body and the fingers of the left hand were closed and spotted with blood. On the table near the bed he found a two-edged knife (a small amputation knife), the blade of which was partly covered with coagulated blood. Death must have ensued from internal hæmorrhage, very little blood being on the garments. He was of the opinion that the aorta had been divided by the cut and death must have ensued very quick. The wound was such a one as could have been self-inflicted. He examined the body and also the room carefully but saw nothing to induce him to believe the deceased had not committed suicide.
>
> Verdict: "Deceased, aged thirty-six years, committed suicide by stabbing himself with a knife in the heart whilst labouring under a fit of insanity."

It was indeed a case that Sherlock Holmes would have delighted to ruminate upon. Was it likely, for example, that Storch stabbed himself and then put the amputation knife back upon the washstand after withdrawing the knife from his chest? Why should the doctor have preferred this gruesome method to the less cruel one of taking a dose from the contents of his package of poison?

It is a sad picture. One can envisage the adventurous young doctor leaving his fond parents in the little Prussian village, carrying his brand-new carpet-bag with the polished little plate of brass announcing to all the world that: "Here goes young B. Storch, M.D., physician and accoucheur, out to the antipodes to win his fortune in the land where gold is being picked up in handfuls by every Tom, Dick and Harry." And back, in one, two, three or four years will come the famous and now wealthy Dr. Storch, to buy himself a lucrative practice in some great *Strasse* of some great Prussian town, to be the envy of all struggling, stay-at-home little doctors, to be the pride of his parents and villagers, to be pointed out as the great Dr. Storch who went to the Australian diggings and made his fortune!

It was a pathetic ending, and I am sure that even old Dr. Charles Alexander Dibdin, who played so many practical jokes upon him, let a tear trickle down his cheek when he read of the unhappy fate of his professional opponent. For Dibdin was a kindly man withal.

Reference.

(1) R. T. Kennedy: "Interlude on a Reef", THE MEDICAL JOURNAL OF AUSTRALIA, June 10, 1944, page 531.

◆

SUTURE OF DEEP SOFT TISSUE WAR WOUNDS AIDED BY PENICILLIN THERAPY.

By THOMAS F. ROSE,
Major, Australian Army Medical Corps,
AND
ARTHUR NEWSON,
Major, Australian Army Medical Corps.

IN this paper are presented the results obtained in 108 deep soft-tissue war wounds in the South-West Pacific Area treated by suture and penicillin. A deep soft-tissue wound is one in which the deep fascia and underlying structures are involved.(3) In this series only wounds involving muscle are considered, those causing injury to main vessels, nerve trunks, bones and joints being excluded. Simple perforating rifle bullet wounds with little muscle damage and no increased subfascial tension are also excluded, as they rarely require surgical intervention.

These wounds were caused by rifle or machine-gun bullets, grenades, mortar and high-explosive shells. They were of all types—perforating wounds, penetrating wounds with one or more missiles, and gutter or tangential wounds. As muscle was involved in every case, usually much soft-tissue damage had been sustained, especially when the wound was due to fragments of high explosives or to ricocheting bullets. Most wounds were contaminated by clothing, mud and vegetable matter. In late cases many were infected by hæmolytic streptococci or staphylococci, or by Gram-negative bacilli, such as *Bacillus proteus*, *Bacillus coli* and *Pseudomonas pyocyaneus*, either singly or together. Gas-forming organisms were not encountered in this series.

Treatment.

Field dressings were applied and oral sulphamerazine therapy was commenced as soon as the patient was recovered from the jungle. This was stopped when penicillin could be administered, generally at a forward surgical unit, where it was injected intramuscularly in amounts of 15,000 units every three hours.(6)(7) Gas-gangrene antiserum and tetanus toxoid were also given. Resuscitation with serum, stored blood or fresh blood was carried out when indicated. When radiological facilities were available, all injured parts were radiologically examined and foreign bodies were localized.

Under general anæsthesia (usually with "Pentothal"), the wounds, no matter how old or infected, were then excised in the usual manner, clothing, dirt and damaged tissue being removed. Metallic foreign bodies were removed if easily accessible, either through the original wound or through a new incision, according to their location. It was, of course, realized that infection cannot always be eradicated from a wound by the excision of devitalized tissues and cleansing of the cavity, because, as Kemp(9) points out, radiological studies show that even at the time of injury foreign matter, including air, is drawn into the tissues far distant from the wound track. This air must carry organisms beyond the reach of even radical surgical toilet. Wounds associated with only small openings in skin and deep fascia, but with much muscle damage and hæmatoma formation, were widely opened, the deep fascia being split to prevent the later tension which may arise in a badly damaged muscle ensheathed by deep fascia which has only a small hole in it. When excision was completed and hæmostasis secured by fine catgut ligatures if necessary, penicillin-sulphanilamide powder (5,000 units of penicillin per gramme of powder) was insufflated by a blower until all raw surfaces were covered with a fine frost of powder.

Consideration was now given to whether the wound could be closed by primary suture. If it was clean and not already infected, and if the skin edges could be apposed without tension, this was performed, deep interrupted silkworm gut or nylon sutures being used. (At times, by reason of skin loss, partial suture only could be carried out.) Primary suture was not performed when there was much deep tissue destruction, oozing, œdema or actual infection. Nor was it considered if the patient had to be immediately evacuated, even though the wound appeared safe for suture. Wounds may not be able to be supervised during rapid evacuation of the patient, and infection or tension requiring the urgent release of sutures may be unnoticed, with disastrous effects.(13) Again, over long lines of communication, penicillin therapy cannot always be provided.

Consequently, when suture was not performed, the operation was concluded by covering the wound with "Vaseline" gauze and applying dressings. The gauze was never packed into the wound, as it rapidly becomes an impenetrable plug.

Whether the wound was sutured or not, the intramuscular administration of penicillin (15,000 units every three hours) was continued until it was certain that no infection by penicillin-sensitive organisms was present.

On the fourth or fifth day after excision without suture, the injured parts were radiologically examined, if this had not already been done. Any foreign body that required removal by reason of size or position was localized. The wounds were then inspected in the operating theatre with all sterile precautions. When necessary, wound revision was carried out under anæsthesia, any dead tissue missed at the original operation being excised, hæmatomata evacuated and foreign bodies removed if indicated.

If the wounds were then clinically clean and the skin edges came together without tension, they were sutured after the insufflation of penicillin-sulphanilamide powder. Bacteriological examinations were carried out in this series only in the case of obviously infected wounds, as the clinical appearance of the lesion is the best criterion for suturing.(10) Intramuscular penicillin therapy was then again continued until the risk of infection was over.

If the wounds were clean but still too œdematous for suture, then, after the insufflation of penicillin-sulphanilamide powder and dressing of the wounds with "Vaseline" gauze, they were again reviewed on the eighth to the tenth day, and if circumstances were favourable, they were sutured. (Suture of wounds up to the tenth day after wounding is known as "delayed primary suture".) Penicillin was again administered intramuscularly so long as the chance of infection was present. If it had been stopped before wound suture, it was recommenced twenty-four hours before suturing and continued afterwards as before.

In spite of early excision, some wounds became infected. Others were first examined late after reception (some up to seven days), and were already infected. These infections were usually mixed, and hæmolytic streptococci and staphylococci sensitive to penicillin, and Gram-negative bacilli insensitive to penicillin, were present. In addition to the parenteral administration of penicillin to combat spread of infection by the cocci, local treatment with a 1/1,000 solution of aminoacridine hydrochloride ("Monacrin") was instituted.(11) "Monacrin" is bactericidal, not only to hæmolytic streptococci and staphylococci, but also to *Bacillus coli* and *Bacillus proteus*, though to a lesser degree. It has no effect on *Pseudomonas pyocyaneus*, but wounds infected with this organism may be treated with a 1/1,000 solution of "Monacrin", to which 2% of acetic acid has been added. Shallow wounds were syringed with 1/1,000 "Monacrin" solution twice a day, and then gauze soaked in the solution was placed in them. Albert(1) has shown that "Monacrin", though absorbed by surgical gauze, is not fixed by it, so that it comes into solution in the body fluids. Deep wounds were treated by the insertion of a tube, with lateral holes, connected to a "Soluvac" bottle filled with the solution. This was allowed to drip continuously into the wound at the rate of eight drops per minute, in the manner recommended by Turnbull.(11) At the end of two days, the wounds were again inspected after being syringed with saline solution. Fresh sterile tubes were reinserted, and the treatment was continued until the wounds appeared clinically clean enough for suture. This treatment was efficacious for all infected wounds, particularly for foul wounds infected with Gram-negative bacilli.

These infected wounds were not generally ready for suture until well after the tenth day (secondary suture), and the operation often entailed more than suturing. The growth of epithelium tended to invert the skin edges, and it had to be excised. In many instances, too, the skin had retracted and undercutting was necessary before the edges could be apposed—a manœuvre which may also be used with safety in primary or delayed primary suturing. If much scarring or indolent granulation tissue was present, a complete wound excision was performed before the suturing. In a few instances it was necessary to use split skin grafts in addition to partial suture. In all cases, penicillin-sulphanilamide powder was insufflated into the wound before it was sutured. Here, again, penicillin was used parenterally both before and after suturing, in the manner already described.

In this series penicillin solution was not administered locally through tubes, because previously we had seen many wounds infected with Gram-negative organisms from this source. It has also been shown that penicillin is of no value when used as an irrigating solution, since it must remain for at least six to eight hours in contact with organisms to exert its maximum effect.⁽²⁾ In a few early wounds, too, we used local drainage tubes; but we have ceased to do this, as they also appear to encourage infection.⁽¹³⁾ Even if infection does not supervene, the tube track may take a long time to heal. Instead of using tube drainage, it is best to delay suture.

Attention was also paid to the patient's general well-being. Adequate protein and vitamin intake was ensured by balanced diet. Blood transfusions were given when necessary, and general diseases such as hookworm infestation, malaria and dermatitis were treated.

If suturing was unsuccessful, the cause of failure was investigated and dealt with, and the wound was again prepared for suture, grafting or plastic repair (*vide* Table V).

Results.

The results of suturing have been divided into two categories, successful and unsuccessful. By a successful result, we mean a wound which, once sutured, has healed without further surgical intervention. Some wounds healed by first intention, some had a serous discharge and others gaped a little at different parts, but rapidly healed with a small amount of granulation tissue. An unsuccessful result refers to those wounds which for any reason required further surgical intervention, either early or late.

The results were summarized in Table I. Thus, of 108 wound suture operations, 91 were successful; of 47 operations for primary suture, 37 were successful; of 35 delayed primary suture operations, 30 were successful; and of 26 operations for secondary suture (including four for late complete excision and suture), 24 were successful.

The successful suture operations are summarized in Table II. The average times of excision after reception of the wound, of suture after reception of the wound, and of healing, were more or less identical in all regions except the scalp (with temporal muscle involvement); results in this region are listed separately, as its healing times and penicillin requirements were less than in the more muscular regions.

TABLE I.

Summary of Results.

Site of Wound.	Successful Suture Operations.				Unsuccessful Suture Operations.				Total Wounds.
	Primary.	Delayed Primary.	Secondary.	Total.	Primary.	Delayed Primary.	Secondary.	Total.	
Thigh	12	12	10	34	1	3	1	5	39
Shoulder	5	4	2	11	3	1	0	4	15
Buttock	4	5	3	12	0	0	1	1	13
Calf	3	3	4	10	3	0	0	3	13
Scalp	5	1	1	7	1	0	0	1	8
Forearm and hand	4	2	2	8	0	0	0	0	8
Arm	2	2	1	5	0	1	0	1	6
Back	2	1	1	4	2	0	0	2	6
	37	30	24	91	10	5	2	17	108

TABLE II.

Successful Suture Operations.

Site of Wound.	Type of Suture.	Number of Wounds.	Average Time of Excision after Reception.	Average Time of Suture after Reception.	Average Healing Time after Suture. (Days.)	Average Healing Time after Reception. (Days.)	Average Amount of Penicillin. (Hundreds of Thousands of Units.)
Thigh, shoulder, buttock, calf, forearm and hand, arm, back..	Primary ..	32	10 hours (6 to 24)[1]	10 hours	13 (8 to 20)	13	4·5 (2·4 to 4·8)
	Delayed primary	29	10 hours (7 to 14)	5·5 days (3 to 10)	12 (8 to 21)	17·5 (11 to 29)	7·7 (3·6 to 15·6)
	Secondary ..	23	31 hours (12 hours to 7 days)	14 days (11 to 27)	13 (10 to 21)	27 (19 to 41)	11·3 (6·6 to 19·2)
Scalp; *musculus temporalis* ..	Primary ..	5	11 hours	11 hours	7·5	7·5	3·2
	Delayed primary	1	4·8 hours	4 days	10	14	4·8
	Secondary ..	1	8 days	11 days	8	19	7·2

[1] The figures in parentheses show the extremes in variation.

These results show the benefit of the early suture of war wounds. Jeffrey and Thomson(8) stated that in their cases 70% of buttock wounds healed in ten days, whereas previously the average time was forty days. Naturally, a patient may not be fit to leave hospital as soon as his wound is healed. Patients with large muscle wounds require prolonged physical therapy for complete recovery. The wound, too, may be the least serious of multiple injuries.

Table II shows that the wounds requiring the most prolonged treatment and the greatest amount of penicillin were those which were treated by secondary suture. For the 23 wounds (scalp wounds excluded) sutured in this manner, the average time of excision after reception of the wound was thirty-one hours (the period varied from twelve hours to seven days). Suture could not be performed for an average period of fourteen days after reception of the wound. Once the wound was sutured, the healing time was equal to that of wounds treated by primary and delayed primary suture; but the total healing time after reception of the wound was much longer, being twenty-seven days as compared with seventeen and a half days and thirteen days respectively for delayed primary suture and primary suture. Penicillin requirements were also greater than those of wounds sutured earlier.

The chief factor causing these wounds to be sutured late, apart from their large size, or from prolonged œdema due to extensive muscle damage, was the presence of infection. Of the total 26 cases of secondary suture in this series, in ten infection was already present—in six with mixed penicillin-sensitive hæmolytic streptococci or staphylococci and Gram-negative bacilli (*Bacillus proteus* and *Bacillus coli*), in two with *Bacillus proteus* only, in one with a penicillin-sensitive staphylococcus and in one with a penicillin-sensitive *Streptococcus hæmolyticus*. In seven other cases infection developed during treatment, in four with *Bacillus proteus*, in two with a mixture of organisms and in one with streptococci.

The time interval between reception of the wound and the first surgical excision is important. Of 79 clinically clean wounds treated within twelve hours of reception, 12 only became infected—seven with penicillin-sensitive streptococci or staphylococci, either alone or with Gram-negative bacilli, and five with Gram-negative bacilli only. Of 16 clean wounds excised after twelve hours, four became infected—two with penicillin-sensitive organisms and two with Gram-negative bacilli. Thus, of 95 clinically clean wounds, 16 became infected.

The effect of infection on the course of these wounds may be seen in Table IIIa, where the general results of the successfully sutured wounds are seen to be practically synonymous with those of secondary suture in Table II. But, of the 16 wounds infected during treatment, nine were unsuccessfully sutured, and they accounted for nine of the seventeeen unsuccessful operations for suture in this series (Cases III, V, VI, VIII, X, XI, XIII, XV and XVI, Table V).

Thirteen wounds were already infected before the patients reached surgical care, the delay being chiefly due to evacuation difficulties. Nine of these infections were due to penicillin-sensitive hæmolytic streptococci or staphylococci, with or without Gram-negative bacilli. The remaining four were due to Gram-negative bacilli only. The lateness of surgical treatment in these cases may be seen in Table IIIb. These wounds had the longest healing times of any of the successfully sutured wounds, and required the most penicillin. In fact, their healing time after reception was longer than that of many of the unsuccessfully sutured wounds. They were all successfully treated by secondary suture, because the infections were overcome before suture was performed. Four of these wounds had to be treated by complete late excision with suture.

Thus, in a total of 108 wounds, 29 were infected at some time or other after reception. The distribution of the infecting organisms is summarized in Table IV. Staphylococci, in pure or mixed culture, were present in 13 cases,

TABLE III.

Successful Suture.[1]

Observation	A. Infection Supervening during Treatment.		B. Infection Present Prior to Excision.	
	Due to Penicillin-sensitive Cocci, with or without Gram-negative Bacilli.	Due to Gram-negative Bacilli (*Bacillus proteus* and *Bacillus coli.*)	Due to Penicillin-sensitive Cocci, with or without Gram-negative Bacilli.	Due to Gram-negative Bacilii.
Number of wounds	4	2	9	4
Average period after reception before excision..	21 hours (4 to 48)[2]	21 hours	80 hours (17 hours to 7 days)	27·5 hours (14 to 48)
Average period before suture (days)	13 (6 to 16)	12·5	16 (7 to 27)	12 (8 to 17)
Average time of healing after suture (days)..	14 (10 to 16)	14	16 (12 to 21)	21 (19 to 24)
Average time of healing of wound after reception (days)	27 (24 to 30)	26·5	32 (19 to 41)	26·5 (26 to 28)
Average amount of penicillin used (hundreds of thousands of units)	11 (7·2 to 15)	8·8	13·0 (7·2 to 19·2)	11·5 (7·2 to 15·5)

[1] Among the unsuccessful sutures recorded in Table V, ten of the wounds were infected during treatment, five by penicillin-sensitive cocci and five by Gram-negative bacilli, one being a pure *Pseudomonas pyocyaneus* infection.

[2] The figures in parentheses show the extremes of variation.

TABLE IV.

Bacteriological Condition of the Infected Wounds.

Organism.	Pure Culture.	With *Bacillus proteus.*	With *Bacillus coli.*	Total Wounds.
Penicillin-sensitive hæmolytic *Staphylococcus aureus*	7	6	0	13
Penicillin-sensitive *Streptococcus hæmolyticus*	2	4	0	6
Bacillus proteus	7	0	2	9
Pseudomonas pyocyaneus	1	0	0	1
Total	—	—	—	29

No example of clostridial infection.

TABLE V.

Unsuccessful Suture.

Case No.	Region and Type of Wound; Missile.	Period before Excision; Amount of Penicillin Used.	Period before Suture; Amount of Penicillin Used.	Time of Failure after Suture; Cause of Failure.	Treatment after Failure; Amount of Penicillin Used; Final Result.	Time of Healing after Reception of Wound. (Days.)	Total Amount of Penicillin Used. (Hundreds of Thousands of Units.)
				Primary Suture.			
I	Shoulder; gutter. L.M.G.[1]	8 hours.	8 hours; 720,000 units.	8 days; sterile muscle necrosis.	Immediate excision of muscle, and suture; 360,000 units; healed in 10 days.	18	10·8
II	Shoulder; gutter. L.M.G.	8 hours.	8 hours; 720,000 units; healed in 14 days.	6 weeks; sterile muscle necrosis.	Immediate excision of muscle and suture; 480,000 units; healed in 12 days.	—	12·0
III	Calf; penetrating; mortar.	8 hours; foreign body removed.	8 hours; 360,000 units.	3 days; abscess, *Staphylococcus aureus* and *Bacillus proteus.*	Healed by granulation in 12 days; 720,000 units.	15	10·8
IV	Calf; perforating; mortar.	8 hours.	8 hours; 720,000 units.	6 days; œdema causing tension; penicillin continued, 480,000 units.	Resutured 4 days later; 240,000 units; healed in 10 days.	20	14·4
V	Scalp; penetrating; mortar.	8 hours; foreign body not removed.	8 hours; 240,000 units; healed in 8 days.	3 months; abscess, *Staphylococcus aureus*, round foreign body.	Removal of foreign body, evacuation of abscess and immediate suture; penicillin 360,000 units; healed in 6 days.	—	6·0
VI	Calf; penetrating; mortar.	10 hours; foreign body not removed.	10 hours; 360,000 units.	10 days; abscess, *Staphylococcus aureus*, round foreign body.	Removal of foreign body and evacuation of abscess; penicillin, 360,000 units; healed by granulation in 12 days.	22	7·2
VII	Thigh; gutter; rifle.	10 hours.	10 hours; 320,000 units; healed in 11 days.	17 days; gaped 6 days after removal of sutures; no infection.	Immediate resuture; penicillin, 880,000 units; healed in 10 days.	27	12·0
VIII	Back; penetrating; H.E.	12 hours; foreign body removed.	12 hours; 720,000 units.	8 days; *Bacillus proteus* abscess.	Abscess incised; healed by granulation tissue in 14 days.	22	7·2
IX	Back; gutter; H.E.	12 hours.	12 hours; 480,000 units.	4 days; hæmatoma.	Sutured four days later; penicillin, 360,000 units; healed in 14 days.	22	8·4
X	Shoulder; gutter; rifle.	12 hours.	12 hours, with drain; 960,000 units.	8 days; abscess, *Streptococcus hæmolyticus* and *Bacillus proteus,* due to drain; penicillin continued, 480,000 units.	Sutured four days later; penicillin, 240,000 units; healed in 16 days.	28	16·8
				Delayed Primary Suture.			
XI	Thigh; gutter; L.M.G.	7 hours; 360,000 units.	3 days; 300,000 units.	8 days; abscess, *Staphylococcus aureus*; penicillin continued, 240,000 units.	Sutured 12 days later; penicillin, 480,000 units; healed in 12 days.	32	13·8
XII	Thigh; gutter; L.M.G.	6 hours; 480,000 units.	4 days; 720,000 units.	6 days; œdema causing tension; penicillin continued, 360,000 units.	Late excision and suture 10 days later; penicillin, 1,320,000 units; healed in 14 days.	34	28·8
XIII	Arm; perforating; L.M.G.	8 hours; 480,000 units.	4 days; 360,000 units.	10 days; *Pseudomonas pyocyaneus* abscess; penicillin continued, 360,000 units.	Late excision, partial suture and split skin graft, 7 days later; 480,000 units; healed in 14 days.	35	16·0
XIV	Shoulder; perforating; rifle.	18 hours; 600,000 units.	5 days; 420,000 units.	8 days; œdema causing tension; penicillin continued, 360,000 units.	Late excision, partial suture and split skin graft 8 days later; 360,000 units; healed in 14 days.	35	17·4
XV	Thigh; penetrating; grenade.	8 hours; Foreign body not removed; 240,000 units.	8 days; 240,000 units; healed in 10 days.	3 months; *Staphylococcus aureus* abscess round foreign body.	Foreign body removed; 24,000 units; wound healed by granulation, 8 days.	—	7·2
				Secondary Suture.			
XVI	Thigh; penetrating; grenade.	8 hours; foreign body removed; 600,000 units.	12 days; 600,000 units.	6 days; *Bacillus proteus* abscess; penicillin continued, 480,000 units.	Resutured 6 days later, 600,000 units; healed in 12 days.	36	22·8
XVII	Buttock; gutter; H.E.	6 hours; 720,000 units; became infected, *Bacillus proteus.*	28 days; excision and suture; 480,000 units.	4 days; hæmatoma.	Immediate evacuation of hæmatoma and suture; 480,000 units; failed 8 days later due to tension; sent on for plastic repair.	—	16·8

---

[1] "L.M.G." = "light machine gun"; "H.E." = "high explosive".

Bacillus proteus in nine, streptococci in pure or mixed culture in six, and *Pseudomonas pyocyaneous* in one only.

It is difficult to draw any conclusions as to the benefit of the prophylactic use of penicillin in this series, as there were in this area no control series of wounds treated without penicillin. Cutler *et alii*(4) found that the prophylactic use of penicillin with adequate surgical measures did not lower the incidence of infection in aerial wounds. Nevertheless, in this series, the infections all remained localized, never becoming more than a surrounding cellulitis or abscess in the case of the cocci, or a surface infection or abscess in the case of the Gram-negative bacilli. There was no instance of generalized infection.

No wounds became infected with clostridia, though one casualty had a hæmolytic streptococcal myositis, which clinically looked like gas-gangrene. That gas-gangrene may occur during treatment with penicillin has been shown by Cutler and Sandusky.(5)

There were 17 cases of unsuccessful suture—ten of primary suture, five of delayed primary suture and two of secondary suture. The details are summarized in Table V.

The chief cause of failure was infection, which accounted for nine cases; suturing under tension (four cases), hæmatoma formation (two cases), sterile muscle necrosis (two cases) and the too early removal of sutures (one case) were the other causes. These causes are mostly preventible. The risk of infection is, of course, always present in deep wounds, no matter how early or carefully excision is performed.(9) This risk may be diminished by the avoidance of local drainage tubes and by delaying suture in doubtful cases. The parenteral administration of penicillin cannot prevent the onset of infection with Gram-negative bacilli; only complete wound excision can do this, and it does not always prevent infection due to penicillin-sensitive organisms, but it will keep such infection localized. Small foreign bodies may act as the cause of an abscess (three cases), even as long as three months after healing of the wound (Case XV). Naturally, it is an ideal to remove every foreign body to prevent this, but it is difficult to tell which foreign bodies will cause abscesses, as so many remain inert in the tissues. Case XV shows, however, that some of the successful suture operations, when foreign bodies are left *in situ*, may later become failures.

Cases I and II are of special interest, in that inadequate excision of muscle at the time of primary suture caused later wound breakdown, owing to the presence of sterile necrosed muscle. It is often impossible to tell whether muscle is dead or not soon after reception of a wound, and this has been used as an argument against primary suture of deep wounds. Nevertheless, failure from this cause occurred only twice in 47 cases of primary suture, and the parenteral exhibition of penicillin prevented infection of the necrosed area.

Care was taken in all cases not to remove sutures too early, as this is a cause of failure. Table II shows that healing times after suture may vary from eight to as long as twenty-one days, and the too early removal of the sutures will cause gaping of a slowly healing though otherwise normal wound. In Case VII, sutures were removed on the eleventh day, yet six days later the wound quietly gaped. These war wounds differ from clean elective surgical wounds, in that the tissues round them are bruised and contused and may be slow to heal.

In certain areas, especially the buttocks and shoulders, it is well known that suture or plastic repair may fail, even though all circumstances are favourable for healing.(12)

Conclusions.

1. One hundred and eight deep war wounds were treated by suture and penicillin therapy. Ninety-one were successfully sutured, and in 17 suture failed. Of the successful suture operations, 37 were for primary suture, 30 for delayed primary suture and 24 for secondary suture. Of the unsuccessful suture operations, ten were for primary suture, five for delayed primary suture and two for secondary suture.

2. The time of healing after reception of the successful primarily sutured wounds averaged 13 days, that of the delayed primarily sutured wounds averaged seventeen and a half days, and that of the secondarily sutured wounds averaged twenty-seven days.

3. Failure of suturing with necessary further treatment led to a prolongation of the average time of healing after reception of the wound. In primarily sutured wounds this time averaged twenty-two days, in delayed primarily sutured wounds it averaged thirty-four days, and of the secondarily sutured wounds, in one it was thirty-six days and the other still required plastic surgery after forty days.

4. In all the above-mentioned groups the healing time after suture was approximately the same (twelve to fourteen days), and was not related to the time of suture after reception of the wound. It was, however, a little longer (sixteen to twenty-one days) for wounds already infected.

5. The efficacy of penicillin is shown in the following ways: (*a*) Of 79 clinically clean wounds excised within twelve hours of reception, seven only became infected with penicillin-sensitive organisms, and of 16 "clean" wounds excised after twelve hours, two only became infected with penicillin-sensitive organisms. (*b*) Of the patients with these infected wounds, and nine patients whose wounds were already infected with penicillin-sensitive cocci before treatment, none developed a general or a spreading infection. (*c*) There were no cases of gas gangrene in this series.

6. The efficiency of "Monacrin" used locally in the treatment of Gram-negative bacillary infections is shown.

7. Infection is shown to be the main cause of the necessity for delay in suture, and the main cause of the failure of suture.

Acknowledgement.

We wish to thank the Director-General of Medical Services, Australian Military Forces, Major-General S. R. Burston, for permission to publish this paper. We also wish to thank Captain K. Sewell, Australian Army Medical Corps, who made the bacteriological investigations of the infected wounds.

References.

(1) A. Albert: Quoted by H. Turnbull, *loco citato*.

(2) D. G. Anderson: "The Treatment of Infections with Penicillin", *The New England Journal of Medicine*, Volume CCXXXII, April 5, 1945, page 400.

(3) J. P. Cole and H. B. Neel: "Injuries of the Extremities in Amphibious Warfare", *Surgery, Gynecology and Obstetrics*, Volume LXXIX, December 6, 1944, page 573.

(4) E. C. Cutler, P. C. Morton and W. R. Sandusky: "Observations on the Prophylactic Use of Penicillin in Wounds of Aerial Warfare", *The British Journal of Surgery*, Volume XXXII, 1944, page 207.

(5) E. C. Cutler and W. R. Sandusky: "The Treatment of Clostridial Infections with Penicillin", *The British Journal of Surgery*, Volume XXXII, 1944, page 168.

(6) A. Fleming, J. Suchet, M. Y. Young and A. J. Rowe: "Penicillin Content of Blood Serum after Various Doses of Penicillin by Various Routes", *The Lancet*, Volume II, November 11, 1944, page 621.

(7) M. E. Florey and H. W. Florey: "General and Local Administration of Penicillin", *The Lancet*, Volume I, March 27, 1943, page 387.

(8) J. S. Jeffrey and S. Thomson: "Penicillin in Battle Casualties", *British Medical Journal*, Volume II, 1944, page 1.

(9) F. H. Kemp: "X-Rays in Diagnosis and Localisation of Gas Gangrene", *The Lancet*, Volume I, March 17, 1945, page 332.

(10) T. R. Sarjeant and W. A. Morton: "Delayed Suture of Soft Tissue Wounds", *The Lancet*, Volume II, September 9, 1944, page 333.

(11) H. Turnbull: "A Rational Treatment of Gunshot Wounds of Long Bones with Established Sepsis", *The Australian and New Zealand Journal of Surgery*, Volume XIV, July, 1944, page 3.

(12) C. S. Whelan and W. D. Thompson, junior: "Skin Grafting and Secondary Closure in War Wounds", *Surgery, Gynecology and Obstetrics*, Volume LXXIX, December, 1944, page 584.

(13) H. Wilson: "Secondary Suture of War Wounds", *Annals of Surgery*, Volume CXXI, February, 1945, page 129.

(14) H. Wilson and F. Threadgill: "Secondary Suture of War Wounds", *Bulletin of the United States Army Medical Department*, Volume LXXXII, 1944, page 77; abstracted in *International Abstract of Surgery*, April, 1945, page 296.

Reports of Cases.

LEPROSY: A REPORT OF NINE CASES AMONG NATIVES OF THE MOUNT HAGEN AREA IN NEW GUINEA.

By NATHAN SHLIMOVITZ,
Captain, Medical Corps, Army of the United States.

THE existence of leprosy among the natives of the coastal regions of New Guinea has been known for some time, and a leprosarium was maintained at Madang for their treatment. Very little was known medically about the natives that lived in the interior highlands of the country. The writer had the opportunity of studying these people over a period of two months, from June to August, 1944, at an Australian native administration station in the Mount Hagen area. This area is over five thousand feet above sea level and is believed to be free of malaria. As far as can be determined by investigation of the literature and from discussion with Australian medical officers who had worked in the mandated territories, leprosy had not been reported as existing in the interior of New Guinea. Upon receiving a skin biopsy from a leper patient, Major T. C. Backhouse, pathologist to an Australian general hospital, who had been in Rabaul before the war, stated in a letter to the writer: "I am rather surprised if the case is of local origin, as I had not expected leprosy to have found its way into Mount Hagen, for although it is relatively common in the Madang and Aitape coasts, the chief focus in the mandated territory is in New Hanover and in New Ireland."

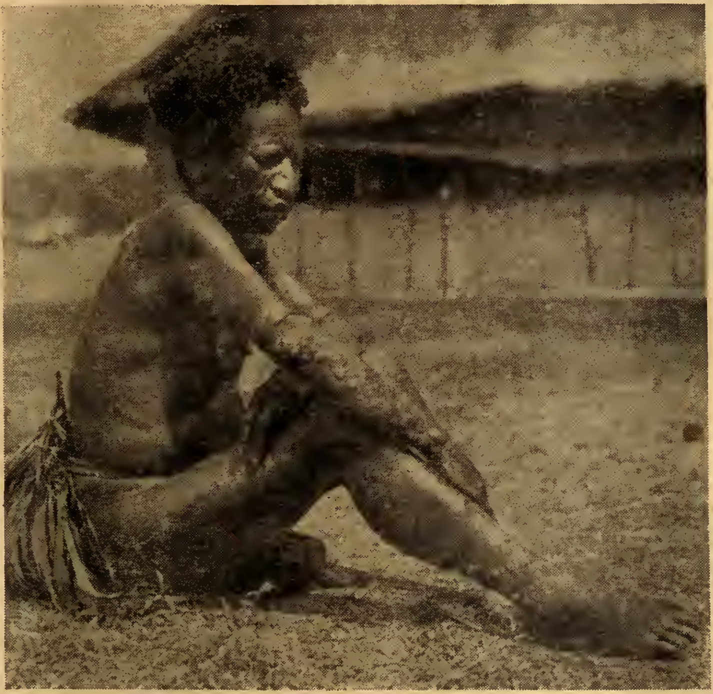


FIGURE I.

The first patients with leprosy were observed in the native hospital, where they came to have treatment for their open sores. Later, others were seen throughout the area, but no attempt was made at census taking or isolation of these patients.

Case I.

A male native, aged thirty-five years (Figure I), came to the hospital for treatment of the sores about the lower portions of his legs and his ankles. They were from five millimetres to 1·5 centimetres in diameter, and were open, ulcerated lesions with some elevation, which gave off a clear serous discharge; microscopic examination of smears of this discharge revealed the lepra bacilli. This patient had no hair on his eyebrows, and only a scant amount of hair was left on his face. He had large nodules on the lobes of both ears, many nodules on his forearm, which seemed to follow the course of the ulnar nerve, and many nodules on his back and legs, particularly on his buttocks. These nodules varied in size from 0·5 to 2·0 centimetres in diameter, some being firm and some fluctuant. A few were secondarily infected and pus could be expressed. Biopsies of these nodules revealed a pathology similar to that of a fibroma, but smears stained with Ziehl-Neelsen's stain were found to contain the *Bacillus lepræ*. This man had hypertrophy of both nipples. He also had spontaneous epistaxis, and an enlarged liver and spleen. He reported that his condition had existed for at least ten years, and had not caused him much discomfort. Late in July, 1944, while at the hospital, he had a rise in temperature to 102° F. and complained of anæsthesia over his entire body, with terrific pain upon movement in his hands and feet. This pain was described as being in the bones and was of such intensity that morphine was required. His temperature at no time returned to normal within the next four weeks, and ranged from 100° F. to as high as 106° F. The nodules of his body seemed to decrease in size, and in general, his skin lesions appeared greatly improved. He wasted considerably, and when the writer left in August, 1944, the patient was rapidly going downhill.

Case II.

A female patient, aged about forty years, had a few small lesions about both ankles and no hair on her eyebrows (Figure II). There was obvious destruction of the nasal cartilage with depression of the nose and a constant foul discharge, microscopic examination of which showed it to be heavily loaded with the *Bacillus lepræ*. Her voice was extremely hoarse, and she was presumed to have an involvement of the larynx. Her liver and spleen were both enlarged, as outlined in Figure II.

Case III.

A young man, aged about twenty-eight years, had large, vitiliginous, anæsthetic plaques on his back; these were slightly elevated and coarse to the touch. His hands had the typical leper-claw deformity, which was more pronounced in the third, fourth and fifth fingers, and there was an associated atrophy of the hypothenar muscles. The ulnar nerve could be palpated and was thickened. The epitrochlear and axillary lymph glands were enlarged. The liver was about two fingers' breadth below the costal region.

Comment.

There were three other patients who had only the vitiliginous plaques. Two of these complained of paræsthesia instead of anæsthesia. Biopsy of these plaques demonstrated the lepra bacilli.

Case VII.

A young male native, aged about thirty years, also had absence of beard and eyebrows. The ulnar nerve was enlarged, but there was no hand deformity. He had a few sores about his ankles, from which a clear serum containing the lepra bacilli could be expressed. Both his liver and spleen were greatly enlarged.

Case VIII.

A woman, aged about forty-five years, had no hair on her eyebrows, a slightly enlarged liver and the typical leper claw hands (Figure IV). These hands were more deformed than those of the others, and she had an open lesion just

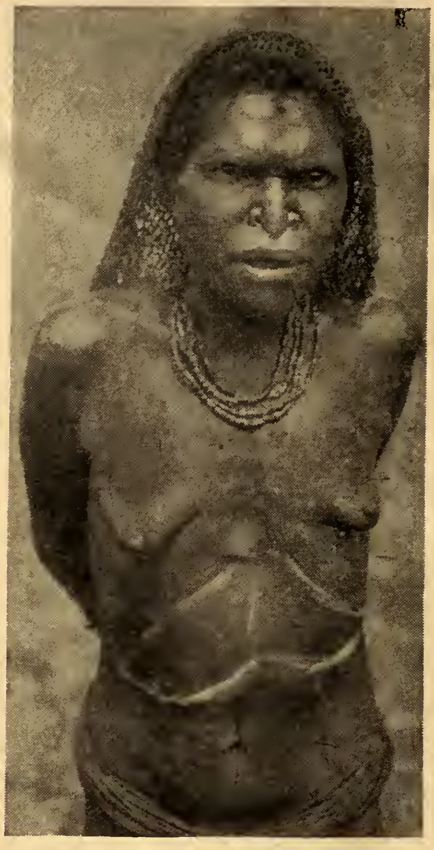


FIGURE II.

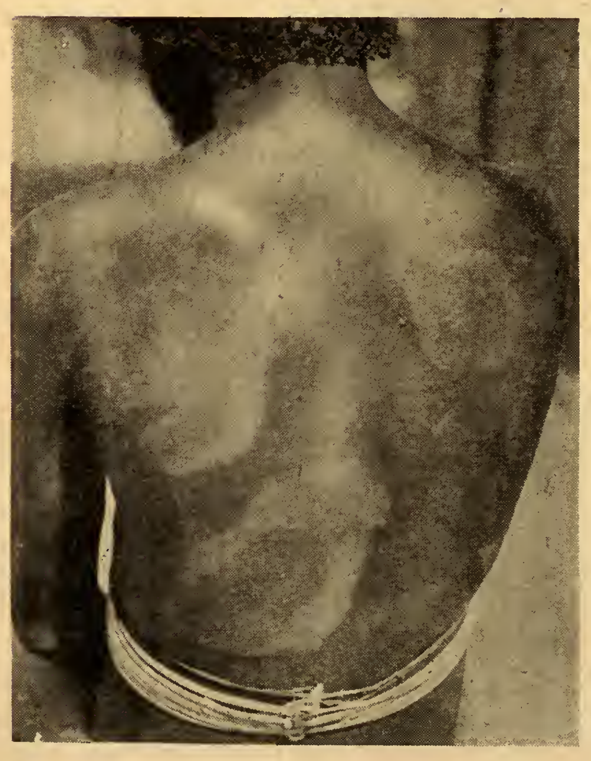


FIGURE III.

below the palm of the left hand. The thenar and hypothenar muscles were atrophied. The fingers had the claw shape with small ulcers at the first interphalangeal joint. She had enlarged ulnar nerves and enlargement of the epitrochlear and axillary lymph glands. She also had sores about her ankles and clawing of the toes of her right foot, which she stated were anæsthetic and had been unknowingly burnt before the fire.

Case IX.

A male native, aged forty-five years, was considered insane by the natives and was undoubtedly psychotic, owing to his manic demonstrations, which amused the natives considerably. Open lesions on his feet were found on microscopic examination to contain lepra bacilli, and he had the leper-claw deformity of his hand and also enlarged ulnar nerves.

Conclusion.

It was found that Gram stain was as suitable for demonstrating the lepra bacilli as was the Ziehl-Neelsen stain. Case I was the only case of nodular leprosy observed. No chaulmoogra oil or related compounds were available for treatment.

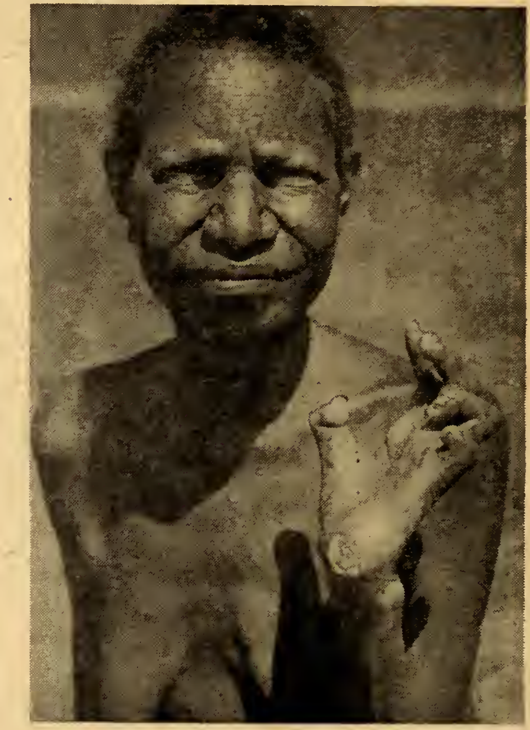


FIGURE IV.

Conversations with Major J. Taylor, District Officer of the Bena Bena area, led to the plan for the isolation of an area in which to place these patients. The writer left before these plans were carried out; but as the coastal leprosaria were not functioning, it was deemed advisable to isolate these patients until such a time as they could be placed in a leprosarium.

It is logical to assume that as leprosy exists in the Mount Hagen area, it undoubtedly exists in other localities on this plateau. Any plans to patrol these areas with a view to locating existing cases is, of course, a problem for the Australian medical authorities. It is the writer's purpose only to call attention to the existence of this disease in the new area.

THREE IMPORTANT USES OF

1 Ten drops daily of Adexolin Liquid for the infant ensure normal dental and skeletal development and build up general resistance.

•

2 Twenty drops of Adexolin Liquid daily during pregnancy safeguard the mother against dental caries, the child against rickets, and both against infection.

•

3 Up to twenty drops of Adexolin hourly during the initial stages of fever, increase resistance. At the later stages, Adexolin in smaller doses supplies the fat-soluble vitamins lacking in low-fat diet.

ADEXOLIN

GL

★ Each c.c. of Adexolin Liquid contains 12,000 i.u. of vitamin A and 2,000 i.u. of vitamin D.

Available in 14 c.c. phials and 2 oz. bottles.

GLAXO LABORATORIES (AUST.) PTY. LTD.
Melbourne Sydney

Well-tried and successful dried milk foods, graded to suit bottle-feeding requirements from birth to weaning

GLAXO

NUMBER NUMBER
1 & 2

THE formula of Glaxo No. 1 approximates to that of human breast milk. Both the fat and protein content are diminished to suit the digestive capacity of the infant during the first months of life. It is also suitable for premature and weakly babies.

Glaxo No. 2 contains a higher proportion of fat and protein and is designed for the feeding of infants whose dietetic requirements are no longer satisfied by a fully humanised milk food.

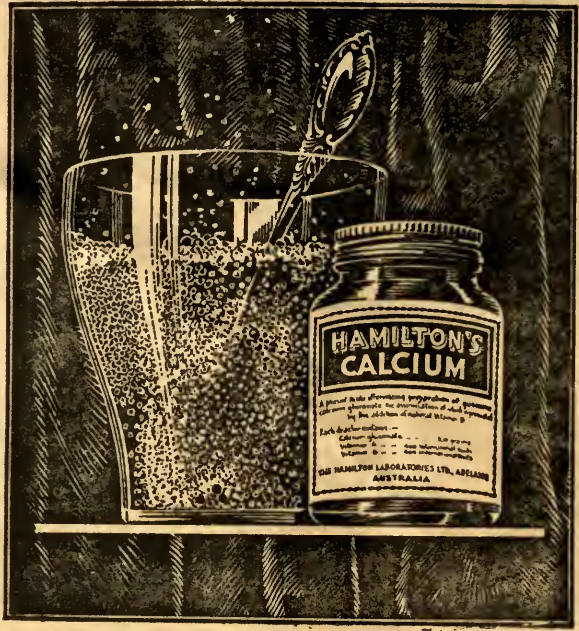
The simple change from Glaxo No. 1 to Glaxo No. 2 provides for the progressing needs of the growing infant without causing any digestive disturbance.

The declared content of vitamin D in Glaxo is a warrant that proper regard is paid to the importance of calcium metabolism. The incorporation of both vitamin D and iron in measured amounts provides factors which build not only for the present but for the future.

Constancy of composition and the greatest possible freedom from bacteria are accepted features of Glaxo.

Both forms of Glaxo are sold in sealed and dated tins in 1-lb. and 3-lb. sizes.

GLAXO LABORATORIES (AUST.) PTY. LTD., MELBOURNE AND SYDNEY


HAMILTON'S
CALCIUM
THE HAMILTON LABORATORIES LTD., ADELAIDE
AUSTRALIA

THE ORIGINAL EFFERVESCENT CALCIUM

HAMILTON'S CALCIUM

FOR PROLONGED THERAPY
FOR GREATER SOLUBILITY

EACH DRACHM CONTAINS 20 GRAINS OF CALCIUM GLUCONATE WITH VITAMINS A AND D
AVAILABLE IN 2½ OZ. AND 15 OZ. PACKAGES

THE HAMILTON LABORATORIES LTD.
ADELAIDE — AUSTRALIA

For pleasant Calcium administration

Vitamin B *Therapy*

B1 B2 - P.P.
BENERVA
COMPOUND
ROCHE PRODUCTS LTD.
'ROCHE'

'Benerva' Compound tablets combine in one single preparation the properties of the three best-known and most active constituents of the vitamin B complex. In the few foodstuffs rich in the complex the different factors vary within wide limits; in 'Benerva' Compound tablets aneurine, riboflavine and nicotinic acid amide are presented in constant proportions and comparatively large doses.

'BENERVA'

COMPOUND

Each tablet contains

	mg.	gammas	int. units
Vitamin B_1	1 ..	1,000 ..	320
Vitamin B_2	1 ..	1,000 ..	—
Nicotinamide	15 ..	15,000 ..	—

International units have not been established for Vitamin B_2 (Riboflavine) or Nicotinic Acid or its Amide. (1 mg. Riboflavine = 400/500 Sherman - Bourquin units.)

Samples of 'Benerva' Compound tablets on request

Indications: Chronic gastro-intestinal disturbances; anorexia; frequent tiredness, both mental and physical; various dermatoses; certain ocular diseases; nervous disorders; neuritis; glossitis; cheilosis and in certain pathological symptoms of senility.

Packings: Bottles of 25, 100 and 500

ROCHE PRODUCTS LIMITED, WELWYN GARDEN CITY, ENGLAND

Sole Agents in Australia:
F. H. Faulding & Co. Ltd., 98, Castlereagh Street, Redfern Park, Sydney, N.S.W.

A NOTE ON TWO LABORATORY INFECTIONS WITH THE VIRUS OF NEWCASTLE DISEASE OF FOWLS.

By S. G. Anderson, M.B., B.S.,
From the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne.

In a recent communication, Burnet(1) reported an accidental laboratory infection induced in human conjunctiva by the virus of Newcastle disease of fowls. This virus had been grown concurrently with influenza B virus in a fertile egg. The inoculum was large, and the infection was fairly severe, but localized in its severity to the one conjunctival sac. Preauricular adenitis developed and general symptoms—headache and malaise—were noted; but all these were transitory.

A rise in the titre of serum antibody was detected by tests *in vitro* and *in vivo* in samples obtained over the four weeks following the infection; but the degree of rise, though significant, was only slight.

The following note records the occurrence of two further laboratory infections due to the same strain of virus, which had been maintained by chick embryo passage and storage at −79° C. between the time of the previous infection and the time of the two reported here.

Case I.

In the course of certain experiments dealing with the adsorption of influenza virus onto calcium phosphate, it was desired to use the virus of Newcastle disease as a control. Therefore, allantoic fluid was harvested from a chick embryo which had died as a result of infection with the latter virus. The virus was completely adsorbed by precipitation of calcium phosphate in its presence; the phosphate was washed, to remove the remaining allantoic fluid, and resuspended in normal saline solution of a volume one-fifth of that of the original allantoic fluid.

A small amount of this suspension was splashed onto the face of a laboratory assistant (McK.). No treatment was given, as it was not realized at the time that infective material might have entered the eyes. Two days later mild bilateral conjunctivitis ensued, one eye being more severely affected than the other. There was some œdema of the lids, but no purulent discharge was present, nor were general symptoms noted. Conjunctival fluid was obtained on the first day of the symptoms. The following day the subject's condition was improving, and three days later no sign of the trouble remained. No adenitis was noted.

The small amount of conjunctival fluid obtained was diluted 1:10 in normal saline solution; penicillin was added to give a concentration of 100 Oxford units per millilitre, and the mixture was inoculated without further treatment into the allantoic cavity of fertile eggs which had been incubated for eleven days.

Allantoic fluid from these eggs, after two days' further incubation, yielded the Hirst phenomenon of red cell agglutination with a "+" end point at 1:40. After further passages in fertile eggs, virus in this fluid was identified as the virus of Newcastle disease by its lethal effect on chick embryos, by the production of characteristic hæmorrhages in these embryos and by its serological reactions.

Serum obtained from the patient before the accident and thirty days subsequent to the infection were inactivated at 56° C. and titrated against five agglutinating doses of Newcastle disease virus, a modified Hirst technique being used. The rise in serum antibody level detected was not significant, even when virus and serum dilutions were incubated together at 37° C. for ninety minutes before the addition of red cells.

Case II.

Some months after the previous infection had occurred, another laboratory assistant was daily harvesting eggs previously inoculated with the virus in the allantoic cavity. On waking one morning she noticed a slight irritation of the left eye, but otherwise complained of no symptoms. On examination of the patient, mild bulbar conjunctivitis was seen, less severe than that of McK.; there was no œdema of the lids, and no purulent discharge was present. The infection was confined to one eye.

Conjunctival fluid was collected. The following day the condition of the eye had improved, and no signs of local infection remained three days later. However, five days after the original signs of inflammation were noted, the left preauricular lymph gland was mildly enlarged and tender to palpation. This adenitis subsided two days later.

The technique of isolation of virus from the tears was the same as in the case of McK. The identity of the virus was similarly established, and the rise in the level of serum antibody was estimated by in-vitro methods. The degree of rise was not significant.

No history was obtainable that suggested the method of infection of the eye in this case. Presumably it was by contamination of the fingers with virus during harvesting of the eggs.

Comment.

While these two cases were of trivial infections only, taken together with the case previously reported by Burnet, they further indicate the potential pathogenicity of the virus of Newcastle disease of fowls for certain human tissues.

Reference.

(1) F. M. Burnet: "Human Infection with the Virus of Newcastle Disease of Fowls", The Medical Journal of Australia, Volume II, 1943, page 313.

◆

Reviews.

PROGRESS IN NEUROLOGY AND NEUROPSYCHIATRY.

In the fifth edition of "Recent Advances in Neurology and Neuropsychiatry", Dr. E. B. Strauss has rejoined his collaborator of the first three editions after a literary separation of ten years, the fourth edition having been the work of Dr. W. R. Brain alone.[1] The development of physical methods of investigation and treatment of mental diseases, more particularly electroencephalography, cortical stimulation therapy and frontal leucotomy, has drawn psychiatry towards the neurological fold. The increasing number of problems of mutual interest to neurologist and psychiatrist have thus combined to bring Brain and Strauss together again on the neuropsychiatric stage and we applaud their reappearance.

In the opening chapter on headache, which gives one the impression of being sketchy, there is no new material with the exception of the reference to Kunkle's and his co-workers' observations on lumbar puncture drainage headache. In diagnostic methods in intracranial tumour the latest paper reviewed is dated 1939. There is no reference to torulosis in the chapter on meningitis and other forms of intracranial infection. The Guillain-Barré syndrome also appears to have been overlooked and nervous lesions in typhus will no doubt be mentioned in a subsequent edition. Information on electroencephalography is full and up to date, and its application in the psychoses is discussed as well as in epilepsy and in cerebral lesions. Forty pages are devoted to the subject of head injuries in which the war literature is not inconsiderable; the chapter concludes with some forty references.

The rival views of Fulton and Walshe regarding the functions of the frontal lobe are set out and the latter's paper of 1942 is reviewed at length The discussion turns on the extent of the area which should be considered as motor, and on what cells are to be included in the pyramidal system. Also what areas are to be held responsible for (*a*) paralysis and (*b*) spasticity? Pre-frontal leucotomy is selected for patients needing relief from morbid anxiety which has proved resistive to other methods of treatment. In the chapter on electric-convulsant therapy the Strauss-MacPhail machine is described and figured—rather ingenuously—"not because we claim any special advantage for it over other apparatus, but because it is the one with which we are most familiar".

---

[1] "Recent Advances in Neurology and Neuropsychiatry", by W. Russell Brain, M.A., D.M. (Oxon.), F.R.C.P., and E. B. Strauss, M.A., D.M. (Oxon.), F.R.C.P.; Fifth Edition; 1945. London: J. and A. Churchill Limited. 8″ × 5″, pp. 377, with 32 illustrations. Price: 18s.

Indications for, complications of and results of convulsant therapy are fully discussed. The authors share the opinion generally held that vertebral crush fractures should rarely need a plaster jacket. Beyond hyperextension of the vertebral column by means of a small hard bolster in the small of the back, no special posture is adopted and no restraint, mechanical or manual, is applied.

Pick's and Alzheimer's dementias are discussed in the chapter on pre-senile dementias. In the latter condition there is a "diffuse degeneration of all cortical layers mostly affecting the frontal poles", but in a later paragraph the Alzheimer syndrome is stated to be a disease of the posterior parts of the hemispheres, while in Pick's dementias the disease process affects more the anterior parts. In fact the two syndromes are often very difficult to distinguish, clinically or pathologically. The encephalogram figured is from a case of pre-senile dementia, type not specified.

The functions of the hypothalamus, and sleep, normal and pathological, have a chapter each, as have also micturition and defæcation, the encephalitides and demyelinating diseases. With regard to the Kenny treatment of poliomyelitis, the authors state: "It may well be that advances in physical therapy springing from Miss Kenny's enthusiasm will outlive her theory and terminology."

Wernicke's encephalopathy is reviewed in some detail in the chapter on vitamin deficiencies. The value of vitamin *E* in neuromuscular disorders remains to be proved. With regard to peripheral nerve lesions, Walshe's criticism of Head's conclusions in the light of recent experimental work is given some prominence. According to Walshe's view, the sensory unit is not the specific end organ associated with any particular sense modality, but an organization of the impulses derived from a constellation of end organs in the area stimulated. One is reminded of the Gestalt theory in psychology which has replaced the idea of faculties. There have been renewed opportunities of studying nerve lesions and the means of assisting recovery of function in which autografts appear to have found an established place.

This work is, of course, specially intended for the postgraduate student, who will find the latest edition as useful as its predecessors in keeping him in touch with recent developments. It is difficult to strike a balance between an adequate review of current work and thought in a speciality, and meticulous references to recent papers. The authors' interests and personal experiences naturally lie in the medical and clinical fields of neurology. We feel sure that this edition will uphold the reputation gained by its predecessors.

VIRUS AS ORGANISM.

The Edward K. Dunham lectures for the promotion of the medical sciences were delivered in 1944 at Harvard by Professor F. M. Burnet, Director of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne. They are now published in slightly expanded form under the title "Virus as Organism",[1] and the general viewpoint of the writer is well stated by the subtitle "Evolutionary and Ecological Aspects of Some Human Virus Diseases". He seeks to interpret present knowledge of these small particulate bodies in the light of their survival in nature, and to understand their place in biology.

There is good evidence to show that the virus particle is a degenerate descendant of larger pathogenic organisms, that it has lost the power of chemical synthesis, and so selects an environment in which that power is not needed for existence—it retreats within the protoplasm of the living cell. There, if the virus is to survive, it must attain a kind of balance between its own needs and the changes it produces in the host cell, and it must have a ready means of transfer to new hosts, and the host species must be abundant. The production of disease is a biological incident in the evolutionary stages of its existence.

Along these broad lines the writer surveys the host-parasite relationship—the physiological and the adaptive environmental reactions of each. Animal hosts seem to have been earlier in the history of the virus, then association between animal and man provided a further evolutionary change. When the virus encounters a host community with little past experience of infection, and therefore containing a large number of susceptibles, and the organism is a strain with a ready means of transfer, epidemic disease may well result. In the consideration of individual viruses, Professor Burnet points out that probably the greatest "biological success" has been attained by the virus of *herpes simplex*, where, although infection in early childhood is followed by considerable antibody formation, nevertheless the virus persists at or near the site of infection for the rest of the host's life; this beneficial equilibrium being disturbed only when other factors in the host allow the virus to produce the symptoms of disease.

Poliomyelitis is another disease in which only the unfortunate few amongst the infected develop its clinical form. There are similar infections in animals, such as Theiler's disease in mice, which furnish striking support and explanations of associated problems; indeed they have contributed largely to the understanding of persistence and spread of the virus.

Influenza, of course, is the virus of which Professor Burnet has made the greatest study, and in this chapter he speculates on the recently discovered variation of the virus from O (original) to D (derivative) form, on the practical question of the usefulness of prophylactic vaccination, and on the reasons for the occurrence of pandemics.

In his concluding chapter the author emphasizes the value to be obtained from the correlation of known facts to a common theory in such a complex field as that of infectious diseases, and the necessity for recognizing the part they may play in limiting excessive proliferation of animal, bird or indeed man.

This is an enthralling book. The great majority of medical readers are accustomed to the point of view which sees pathogenic microorganisms as the agents of death to the human race; he reflects little upon the fact that if the host is killed the parasite dies, too, that if large numbers of an infected population have clinical disease, they develop immunity against reinfection and the number of available hosts in a given community is reduced.

Mankind loves mirrors which reflect the image of things as they are; Professor Burnet takes us behind the looking glass, a little way down that enchanting passage, that evolutionary pathway along which the virus as an organism has moulded the lives of the creatures it has selected as its host.

SURGERY FOR DENTAL STUDENTS.

"Essentials of Surgery for Dental Students" is a well presented and concise summary of those aspects of surgery which are of particular interest to dental students.[1] The book is well illustrated and produced.

Some of the author's ideas may be queried by dental authorities. For example, he still retains the dental cyst in the classification of epithelial odontomes. He uses the old term "myeloid epulis" instead of the more modern benign giant-cell epulis", and states that this growth arises from the alveolar bone marrow; many oral pathologists would dispute this source of origin. "Fibroid or fibrosarcomatous epulis" is classified synonymously with "fibrous epulis". In a modern textbook the use of the term "Riggs' disease", even as a synonym, is rather distressing. The statement that "the ramus and neck of the condyle are rarely fractured" is not correct, and in the Gillies method of elevating a depressed malar bone the periosteal elevator is passed deep to the temporal fascia and not through the subcutaneous tissue as is stated on page 129.

Carabelli's tubercle is not recognized as a manifestation of syphilis (page 229), and Figure 180 would appear to indicate that the lower permanent incisors, rather than the upper, demonstrate the classical formation of Hutchinson's teeth. The legend of Figure 151 indicates that the author's conception of "impaction" of wisdom teeth is not in accord with accepted dental teaching. The idea that "excessive dental use of cotton wool" is a local cause of gingivitis (page 45) surely requires some further explanation.

The chapters on non-glandular swellings of the neck and the cervical lymphatic glands are very clearly and ably set out and are excellent short summaries of these subjects.

---

[1] "Virus as Organism: Evolutionary and Ecological Aspects of Some Human Virus Diseases", by Frank Macfarlane Burnet, M.D., F.R.S.; 1945. Cambridge, Massachusetts: Harvard University Press. 8¼" × 5½", pp. 144. Price: $2.00.

[1] "Essentials of Surgery for Dental Students", by J. Cosbie Ross, M.B., Ch.M. (Liverpool), F.R.C.S. (England); 1945. Edinburgh: E. and S. Livingstone Limited. 8½" × 5½", pp. 292, with many illustrations. Price: 20s. net.

The Medical Journal of Australia

SATURDAY, MARCH 16, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE TREATMENT OF RHEUMATISM BY DEHYDRATION.

Something like 60% to 65% of the weight of the adult human body is accounted for by its water content; when this percentage is reduced there follow disturbances of metabolism, of the circulation and of renal function. D. A. K. Black, who reviewed this subject last year,[1] pointed out that a distinction exists between dehydration caused by primary loss of water, and dehydration in which the loss of water is secondary to a reduction in the total salt content of the body. He described the body water as being distributed in three compartments—the blood vessels, containing plasma; the tissue spaces containing interstitial fluid; and the cells, including the erythrocytes, containing intracellular fluid. Of the 65% of body weight of a man weighing 70 kilograms or 134 pounds, 5% is due to plasma, 20% to interstitial fluid and 40% to intracellular fluid; this is to say, of a total body fluid content of 46 litres, three would be plasma, 14 interstitial fluid and 29 intracellular fluid. While the capillary endothelium and the cell wall which separate the three compartments from one another are freely permeable to water, they have a selective permeability in regard to substances held in solution. Thus healthy capillary endothelium is relatively impermeable to protein, and plasma differs from interstitial fluid mainly in its high protein content. Black points out that body weight begins to fall as soon as the subject stops taking water; the loss in weight is greater on the first than on subsequent days. In three to four days of dehydration the loss in weight amounts to about 6% of the body weight, corresponding to 10% of the body water. Black, McCance and Young found that while the water content of the body fell about 10%, the electrolyte and urea content showed a slight increase, so that, distributed evenly over the smaller volume of body water, water loss would produce an increase in concentration of the same order as that directly observed. Black remarks that since the osmotic pressure of the plasma depends on the concentration of its osmotically active constituents and the plasma is in osmotic equilibrium with the other body fluids, there must be a progressive rise in the osmotic pressure of the body fluids during the period of water deprivation. In contrast to the sodium and chloride in plasma, the potassium level shows a slight fall and the urinary excretion of potassium rises during water deprivation. Since extracellular fluid has sodium as the main base, and intracellular fluid potassium, it is possible to deduce the proportion of extracellular and intracellular fluid lost from the body, by comparing the sodium and potassium balance after allowance has been made for changes in the blood concentrations. It has in this way been found that about two-thirds of the total water lost in water deprivation is lost from inside the cells—the body contains about twice as much intracellular as extracellular fluid, the water inside the cells contributes the same proportion of its volume as the water outside, and the loss of fluid is distributed over the whole volume of body water.

With these facts in mind we may turn to a report on the effects of artificial dehydration in rheumatism.[1] W. S. C. Copeman and L. G. C. Pugh have carried out an arresting piece of clinical research on patients suffering from fibrositis, acute and subacute articular rheumatism and sciatica. These authors explain that it is generally accepted that the pain in true fibrositis is associated with circumscribed areas of local tenderness called trigger points and that the symptoms can be relieved sometimes permanently by the injection of procaine into those areas. They find that painless nodules of the kind mentioned do not seem to signify rheumatism. They have recently examined 500 soldiers, and they found non-tender nodules equally in fibrositic and non-fibrositic subjects. However, tender nodules and trigger points were found in only 3% of men who did not give a clear history of fibrositis as compared with 30% in those who did. Unfortunately actual numbers are not given in regard to this observation. Copeman and Ackerman have shown that trigger points occur with great regularity in certain regions of the body and that these regions coincide with the distribution of basic fatty tissue which persists in emaciated bodies. Dissection of these areas of fatty tissue shows that they consist of lobules of fat lying within definite compartments with tough fibrous walls. The lobules do not appear normally to fill the space available within the compartments. Copeman and Pugh believe that in fibrositis an important factor in the production of pain and local tenderness is œdema in certain lobules and the development of tension as they swell and fill their compartments. They have found that this increase in size may lead to herniation if the fascial walls are partially deficient. In twenty cases of established fibrositis fat herniæ of this kind were demonstrated at biopsy and their removal was followed by lasting relief of symptoms. On microscopic examination of the biopsy material no histological evidence of inflammation was found in the form of cellular infiltration, although macroscopically obvious œdema and congestion were present. Copeman and Pugh conclude that the swelling must have resulted from some process other than the classical inflammatory reaction. They thought that they might be able to reverse the process by reduction of the fluid content of the affected tissues if they induced a clinical state of dehydration. This they did. They were concerned chiefly with fibrositis in the back in soldiers, but they included cases in which other parts of the body were affected. In these, trigger points were found in fibro-fatty tissue round tendon sheaths, bursæ and muscle insertions; they are included under the heading of chronic rheumatism. They also included in their observations patients suffering from acute or subacute articular rheumatism whose articular pain was referred from one or more trigger points near the joint. Some patients with sciatica due to prolapse of an intervertebral disk were included as well. Dehydration was carried out by three methods before a standard was adopted. The first method extended over four days, during which eight ounces of fluid were allowed each day with dry food. In the second method no food or drink was taken for twenty-four hours and the fluid output was increased by the administration of sodium sulphate at hourly intervals for six doses. In the third method the period was increased from twenty-four to thirty-six hours. In all cases preliminary dehydration was followed by an intravenous injection of fifty millilitres of a 30% solution of sodium chloride into one of the veins of the arm. Immediately after the injection the patient was allowed to drink four ounces of tea to mitigate thirst. Apart from this, no fluid was permitted for four hours, but at the end of the four hours all restrictions were lifted and the patient was encouraged to get up and move about. Copeman and Pugh explain that this work was planned as a physiological experiment. It was not anticipated that any relief of pain that might occur would be more than temporary. Certain patients, however, appeared to be cured, and the results have been analysed to show the potential therapeutic value of the procedure. For a result to be regarded as successful it was decided that improvement in functional activity and relief of pain had to be at least 75% of complete restoration. Of 22 patients with fibrositis, 13 registered a success and nine a failure; of 19 patients with chronic rheumatism, 13 registered a success and six a failure; of 28 with sciatica, 11 registered a success and 17 a failure. The result in sciatica is held to be due to a mechanism different from that operating in fibrositis—it is probably due to the effect of shrinkage of nervous tissue and the lowering of the pressure of cerebrospinal fluid.

---

[1] *The Lancet*, March 10, 1945.

[1] *The Lancet*, November 3, 1945.

This work should receive attention from clinician and laboratory worker. Copeman and Pugh explain that they were unable to secure a series of controls. Any future investigator of this method—and it is hoped that further investigations will not be long delayed—will secure a series of controls more easily than Copeman and Pugh could in their army work. It would be interesting if volunteers could be found for submission to experimental investigation of the fatty areas described by Copeman and Pugh to discover whether the condition of fibrositis with its typical pain could be produced. Since removal of these areas sometimes gives relief to persons affected by fibrositis, it might be possible to produce symptoms in persons who have these areas but complain of no symptoms. Further work may, as Copeman and Pugh suggest, advance our knowledge and treatment of rheumatic diseases. In the meantime dehydration may in selected cases find a sphere of usefulness as an empirical method of treatment.

Current Comment.

THE HEALTH OF THE PRE-SCHOOL CHILD IN AUSTRALIA.

In the issue of this journal of December 8, 1945, attention was drawn to a book by Dr. J. H. L. Cumpston and Miss Christine Heinig, which gave a description of the first five years' work of the six Lady Gowrie Child Centres—their design, equipment and purpose. Recently their health record has been "assembled" by Dr. F. W. Clements and Miss Margaret Macpherson.[1] The account covers the records of 1,289 children ranging in age from nineteen to seventy-two months at the time of their admission to the six centres, one of which exists in the capital city of each of the Australian States. A medical unit is attached to each centre, and it is obvious that the medical supervision of all children attending has been scrupulously careful and accurately recorded. Interruptions to the work of two of the centres occurred as a result of Japan's entry into the war; the Perth centre was closed for four months in 1942 and the Brisbane centre for the whole of that year. Further interruptions in the continuity of the records are of necessity occasioned by absence of children for any reason. The points particularly noted in the medical units of the centres were: growth (weight, sitting height, standing height), including possible seasonal variations in rate; chest circumference and the antero-posterior and lateral diameters of the chest; posture (by visual observation and by lateral and antero-posterior photographs); the presence of abnormal tonsils and adenoids; the presence of abnormal cardiac signs; the presence of abnormal pulmonary signs; the presence of strabismus; abnormalities of the ear; umbilical and inguinal hernia; dental caries; the nutritional status of the children; the incidence of illness; the causes of absenteeism. The high incidence of upper respiratory tract infections occasioned an investigation into the question whether the children attending the centres suffered more from these infections than children not attending centres. The investigation was undertaken at the Melbourne centre; a "control" group of children of comparable ages was observed as carefully as the rather difficult circumstances allowed, and it became obvious that children who did not attend the centres did not suffer the same incidence of upper respiratory tract infections as the centre children. This was so, in spite of the rigid precautions taken to exclude from the centres any children who seemed likely to be sources of infection of any type; the same care was taken with the members of the staff. Of course, the reasons for this state of affairs are fairly obvious; not all the blame can be attached to the congregation of children of similar age groups, for there are many hours during the week when the children are free to mingle with older brothers and sisters, parents and friends.

Clements and Macpherson have faced and answered the question whether the centres have fulfilled the more important of their functions—to benefit the children. In spite of some contrary evidence, the answer is an unqualified affirmative. Not the least of the benefits conferred on children attending the centres is that of companionship. From the nutritional point of view, the provision of a midday meal, properly balanced and prepared, has been of enormous value. Not only have many of the children been provided with essential food elements which they would otherwise have lacked, but also a step forward has been made in a number of instances in the education of parents on matters of nutrition and hygiene. The problem of the child who will not eat has been tackled, and many such children have been cured of their bad eating habits. Naturally there were failures, most of them arising from lack of home cooperation and from irregular attendance at the centre. Some mothers saw no difficulty, because the

---

[1] "The Lady Gowrie Child Centres: The Health Record", assembled by F. W. Clements, M.D., and Margaret Macpherson, B.A.; 1945. Canberra: Commonwealth of Australia, Department of Health. 11″ × 8¾″, pp. 73, with illustrations.

"**Marmite**

did a great job for us Doc!"

MARMITE
VEGETABLE EXTRACT
MADE IN AUSTRALIA
TRADE MARK
1oz NET

Wherever our fighting men were faced with beri-beri and other vitamin-deficiency diseases MARMITE Vegetable Extract was rushed to the rescue. Prescribed for thousands of under-nourished Prisoners of War, and included in countless Red Cross parcels this popular appetite-sharpening food proved its exceptional vitamin potency by immediate and satisfactory patient response.

Marmite is now made in Australia by The Sanitarium Health Food Company and supplies are rapidly becoming adequate for all civilian requirements.

THE SANITARIUM HEALTH FOOD COMPANY

M204-4460

Vitos

B COMPLEX
OR
SINGLE
FACTORS
?

IN VITAMIN THERAPY

The established interdependence of members of the vitamin B Complex often constitutes a limiting factor in successful sub-clinical vitamin therapy, where preparations providing only a single member of the Vitamin B Complex are prescribed.

Vitos is one of the richest known sources of Vitamin B_1, B_6 and E and also provides significant amounts of several other components of the B Complex, e.g., Riboflavin, Niacin and Pantothenic Acid, combined with 30% Protein of high biological value.

Vitos Vitamin Abstracts.
Williams, R. J. "Water Soluble Vitamins"
Ann. Rev. Biochem, XII.
The complex relationship existing between the various components of the B complex is discussed with due stress being laid on the fact that the effects produced by any one member are often dependent on the supply of others.

Prepared under scientific laboratory control and guaranteed to contain no synthetic vitamin admixture

H. L. BUSSELL & CO. PTY. LTD.
20-32 MEAGHER STREET, SYDNEY

ANTIPHLOGISTINE
MAINTAINS
MOIST HEAT

Applied comfortably hot directly to the affected area, ANTIPHLOGISTINE maintains *Moist Heat* for several hours, and is effective in helping to relieve the pain, swelling and muscle spasms due to sprains, strains and contusions.

In the symptomatic treatment of chest colds and bronchitis, the *Moist Heat* of ANTIPHLOGISTINE is used in helping to relieve coughs, muscular soreness and tightness of the chest.

ANTIPHLOGISTINE may be used with chemo-therapy.

Antiphlogistine

Made in Australia

Antiphlogistine
The Denver Chemical Mfg. Co.
Sydney

The Denver Chemical
Manufacturing Company
78 Liverpool St., Sydney

WAMPOLE'S
PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

FELLOWS' Compound Syrup

FORMULA: Each fluid drachm contains

Strychnine Hydrochloride	Gr. 1/64
Manganese Hypophosphite	Gr. 1/8
Potassium Hypophosphite	Gr. 1/8
Sodium Hypophosphite	Gr. 1/8
Calcium Hypophosphite	Gr. 1/3
Iron Pyrophosphate	Gr. 1/8
Quinine Sulphate	Gr. 1/20

A long-tried and most valuable compound containing Strychnine, Quinine, and several important Mineral Salts.

Produces a bitter and therefore tonic effect upon the alimentary canal; improves tone and nutrition of muscle; and provides limited respiratory and vaso-motor stimulation.

"FELLOWS" is a reliable compound, manufactured under the strictest supervision, and with a consistency of quality that only the greatest care in manufacture can ensure.

Samples on Request

FELLOWS MEDICAL MANUFACTURING COMPANY, INC.
26 Christopher Street, New York City

child ate well at home; but what he ate was immaterial—one child drank no milk, but always drank two bottles of cordial before going to bed. It is a tribute to the tact and persistence of the staff at this child's centre that he was finally asking for milk at home. The regular medical supervision has resulted in the rectification of many slight physical aberrations and some more important conditions; but, again, some of the parents did not act on the advice given by the centre's medical unit, so that their children remained untreated. The inclusion of a rest or sleep period in the centre's programme means that the children do not miss their daytime rest; records of sleep or rest were kept and have proved of value in the study of the children. Clements and Macpherson recognize the statistical inadequacy of the findings made up to date, but believe that the work is worthy of extension. No better opportunity presents itself for the study of the pre-school child than through these centres. But Clements and Macpherson believe that the most important function of the centres is the provision of medical supervision and facilities for social adjustment; the midday meal and the rest period they hold to be of secondary importance. Let them outline in their own words their hopes for the future:

> We feel we cannot over-emphasize the importance of extending the service to the whole family. The parents must be brought more and more into the programme and the health service must be extended to include the elder brothers and sisters. The family must become the unit if the best work is to be achieved.
>
> We would urge that, just as the Lady Gowrie Centres were built as demonstration units to test the ideals and standards of pre-school child care, so should a family unit—some type of community centre—be built. These units should not provide facilities for either a midday meal or a sleep period for the pre-school child, but should enable full medical supervision to be maintained, and should provide facilities for social adjustme results of a survey from the
> children. health angle of 1,000 recent

It is obvious that the Lady Gowrie Chi missions to the Toronto Hospital,
even in their first five years, provide Weston, on account of parenchymal
benefits to the children attending th
however incomplete, that will ultim
children in general. The work, up al
fully recorded, should be exter vice
foundation for an important wards
research. 1 milli-
vapour
ence of β
determined

CONGENITAL

ount of air
then plating
plates containing

Rarely is the bl violet in 500,000,
this lack does o e of "settling plates"
prolonged and ing times in the wards.
be congenit tests were performed in
or it never wards, over two monthly
have with control periods when no
prob ylene glycol vapour was present.
tub mean reduction in the number of
ta olytic streptococci recovered was
%, the figures obtained from settling
ates being less favourable than those
om air analyses; the cross infections
iscovered in the patients diminished markedly. The findings in this study are appreciably less than in laboratory studies, in which complete killing of bacteria can be ensured. The reasons for this were thought to lie in the fact that dried dust particles from bedclothes are much less penetrable to the glycol vapour and they may be of such size that effective concentrations of he vapour cannot concentrate around hem.

T. T. Puck, Morton Hamburger, junior, O. H. Robertson and Valerie Hurst (*The Journal of Infectious Diseases*, May-June, 1945) have studied further the combined action of glycol vapour and dust control methods on airborne β hæmolytic streptococci in

resemblance, the disease affects both sexes. Consanguinity of the parents is probably a significant feature, for the parents were first cousins in three of the seven cases reported. In each of two cases, the patient had a sister die of umbilical hæmorrhage in the neonatal period. The cause of this hæmorrhage was not investigated, but it was probably a fibrinogen lack. The sister of the authors' patient died, although treated with vitamin *K*, which usually checks the more common hæmorrhagic disease of the newborn that is caused by a prothrombin lack. Investigation of the blood in these seven reported cases showed no fibrinogen at all; no clot formed after many hours in attempts to determine the clotting time of the blood; the bleeding time was prolonged in some cases, but normal in others; the blood platelets were usually normal in number, but in two patients an intermittent thrombocytopenia occurred; the leucocytes were not significantly altered and the level of the red blood cells was affected only by recent hæmorrhage.

In addition four cases have been reported of adults who had suffered from a hæmorrhagic tendency throughout life and whose blood fibrogen level was low, and in three of whom there was a family history of bleeding. This condition is described by the name congenital hypofibrinogenæmia.

It is probable that congenital afibrinogenæmia is more common than the literature suggests, and that it is the true cause of the bleeding of some of the children regarded as hæmophiliacs and of some of the babies who die of hæmorrhagic disease of the newborn. It is especially in regard to this latter group that the condition should be kept in mind, for since it has been known that neonatal bleeding is usually due to a prothrombin lack, many such infants have been treated successfully with vitamin *K* instead of by blood

pulmonary tuberculosis. No less than 520 of the patients were aged over thirty years. In the age groups under thirty-one years, women preponderated; in the higher age groups men were more numerous than women, especially in the group aged over fifty years. *Mycobacterium tuberculosis* was found in the sputum or gastric contents of 714 of the subjects; in 434 of these instances the organisms were found on direct examination of a smear of the sputum and in another 151 on concentration. Cough was a common finding, and occupational opportunities for infecting other people were plentiful. The author points out that pulmonary tuberculosis is a disease of all ages. From the point of view of prevention, there seems to be an urgent need to discover actively infective patients in the higher age groups at an earlier stage than is often the case at present. In the presence of suspicious symptoms the author urges more alacrity in advising an X-ray examination of the chest. He believes that an extension of the mass survey method is imperative.

An X-Ray Survey of Healthy Troops in Canada.

R. W. Boyd (*The Canadian Medical Association Journal*, January, 1946) states that during 1944 the incidence of tuberculosis was found to be rising in the Canadian army overseas, though no similar rise was detected in troops remaining in Canada. It was decided to conduct a random chest X-ray survey of healthy military personnel in Canada. More than 5,000 soldiers were chosen for examination; all were aged under thirty-five years, had served in

Streptomycin and "Promin" in Experimental Tuberculosis.

M. I. Smith and W. T. McClosky (*Public Health Reports*, September 28, 1945) have investigated the chemotherapeutic action of streptomycin and "Promin" in tuberculosis of guinea-pigs. Two sets of experiments were made, the first to determine whether streptomycin had any ameliorating effect, and the second to ascertain its value as compared with "Promin". Streptomycin is a substance isolated by Waksman and co-workers from *Actinomyces griseus*, and has antibiotic properties against the tubercle bacillus. "Promin" is sodium p-p′ diaminodiphenylsulphone N-N′ didextrose sulphonate. The authors found that the daily intramuscular injection of 5,000 units of streptomycin over a period of ninety days in guinea-pigs infected with a human strain of tubercle bacilli produced a chemotherapeutic effect superior to that obtained with 0·5 gramme per kilogram of "Promin" administered orally each day over the same period. Since the dose of "Promin" used was about half the maximum tolerated dose, while that of streptomycin was less than one-twentieth of the maximum tolerated dose, it appears that streptomycin has a chemotherapeutic index better than ten times that of "Promin". The authors believe it possible that by an increase in the dose of streptomycin and by better methods of administration, its chemotherapeutic effectiveness may be enhanced. In one group of guinea-pigs combined treatment with streptomycin and "Promin" was given; 5,000 units of streptomycin were given each day intramuscularly, and 0·5 gramme of "Promin" per kilogram was given by mouth daily. The authors state that in this group the results were better than any previously obtained under experimental conditions.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Phage Typing of Staphylococcus Aureus.

G. S. Wilson and J. D. Atkinson (*The Lancet*, May 26, 1945) have carried out typing of staphylococci by the bacteriophage method. Using a modification of Fisk's method of isolating phage from cultures and then cross-testing the parent culture with purified phage, they recognized fourteen different types of phage, and three of these had subtypes. Two hundred and seventy-eight strains of staphylococci were then tested for their susceptibility to phage action, and 60·4% of these were typable, 22·6% were acted upon by phage, but were not classifiable, and 17% were not susceptible to phage. Investigations in food poisoning epidemics are quoted in which phage typing enabled the specific staphylococcus to be identified from amongst numerous coagulase-positive staphylococci present in suspected persons; this being the purpose for which phage typing is of greatest practical value.

Bacteriostatic Effect of Human Serum on Group A Streptococci.

way, certain of them when grown at room temperature yielded extracts in which type specific M substance could be readily identified. Search was made for a substance which destroyed the serological activity of the M antigen at 37° C. From one of the cultures an active extract was prepared, which when added to another culture already identified, destroyed the serological reactivity known to be present. The destruction of the M substance proceeded most rapidly at pH 8·0; there was little effect at pH 4·0. A concentrated enzyme solution was prepared, and it was found that the presence of living bacterial cells was necessary for its action and that it attacked other substrates such as casein and gelatin, and human and rabbit fibrin. Mouse passage of the parent strain enhanced its virulence and inhibited production of the enzyme. The enzyme is inactivated by iodoacetic acid, and by normal rabbit and mouse serum.

Transformation of Pneumococcal Types.

Maclyn McCarty (*The Journal of Experimental Medicine*, May, 1945) has studied the reversible inactivation of the substance inducing transformation of pneumococcal types. It was noted that during isolation of the transforming substance, addition of ascorbic acid abolished its biological effect, although there was no apparent change in its physical properties. A group of substances was then studied, including

sene, which
effect.
nric
f

and the order of mixing the reagents all seemed to play a part. It was not clear whether the reaction was wholly enzymatic or not. The penicillinase was found very suitable to add to high concentrations of penicillin, so that they might rapidly be tested for sterility, with particular regard to the identification of tetanus spores.

Immunological Studies in Subacute Bacterial Endocarditis.

Max Grolnick and Leo Loewe (*The Journal of Laboratory and Clinical Medicine*, July, 1945) have made a series of immunological studies in patients with subacute bacterial endocarditis treated by the combined penicillin-heparin method. This consisted in continuous intravenous infusion of penicillin in saline solution, sufficient "to render the blood sterile", and heparin was given either subcutaneously or added to the infusion. The first study was directed towards cutaneous phenomena produced by the drug, and to intracutaneous and ophthalmic tests: diluted penicillin solutions were used and an extract of *Penicillium notatum* containing from 0·01 to 0·1 milligramme total nitrogen; and a saline solution control was used. Seventy-five normal control subjects and 23 patients were observed over several months, many tests being repeated, during and after treatment. No evidence whatever was obtained of the development of any reactivity or sensitivity, either to penicillin or extracts of *Penicillium notatum* in either patients or controls.

Dangerous Carriers of Hæmolytic Streptococci.

Morton Hamburger, junior, Margaret J. Green and Virginia C. Hamburger
he *Journal of Infectious Disease,*
-August, 1945) have studied the
em of the dangerous carriers of
ytic streptococci. The number
isms expelled by carriers with
and "negative" nose and
tures was estimated in 400
ts by pinning a small cotton
he bottom sheet of the
four hours, shaking it
then plating aliquots
ining one part of
0, incubating the
ny counts. It
nts whose
positive
es as
ld be
nasal
ner,
w
er

Applied comfortably hot directly to the affected area, ANTIPHLOGISTINE maintains *Moist Heat* for several hours, and is effective in helping to relieve the pain, swelling and muscle spasms due to sprains, strains and contusions.

In the symptomatic treatment of chest colds and bronchitis, the *Moist Heat* of ANTIPHLOGISTINE is used in helping to relieve coughs, muscular soreness and tightness of the chest.

ANTIPHLOGISTINE may be used with chemo-therapy.

Antiphlogistine

Antiphlogistine
The Denver Chemical Mfg. Co.
Sydney

Made in Australia

The Denver Chemical
Manufacturing Company
78 Liverpool St., Sydney

FELL
Compound

FORMULA: Each fluid drach

Strychnine Hydrochloride	Gr.
Manganese Hypophosphite	Gr. 1/
Potassium Hypophosphite	Gr. 1/
Sodium Hypophosphite	Gr. 1/8
Calcium Hypophosphite	Gr. 1/3
Iron Pyrophosphate	Gr. 1/8
Quinine Sulphate	Gr. 1/20

A long-tried and most valuable compound containing Strychnine, Quinine, and several important Mineral Salts.

Produces a bitter and therefore tonic effect upon the alimentary canal; improves tone and nutrition of muscle; and provides limited respiratory and vaso-motor stimulation.

"FELLOWS" is a reliable compound, manufactured under the strictest supervision, and with a consistency of quality that only the greatest care in manufacture can ensure.

Samples on Request

FELLOWS MEDICAL MANUFACTURING
COMPANY, INC.
26 Christopher Street, New York City

the blood stream was found sensitive to a concentration of 0·1 unit per millilitre *in vitro*, who had no evidence of heart failure, and who could be treated in hospital for six to eight weeks. Dosage of the drug was 200,000 to 300,000 units per day given intravenously for three weeks, and thereafter by eight intramuscular injections for three to five weeks. No heparin was used. The immediate effect of treatment was subjective improvement of the patient, followed by fall in the patient's temperature in eight out of eleven instances. Blood cultures before long could not be grown. Petechiæ frequently continued to appear in spite of this, and some embolic phenomena occurred also. Two patients were febrile for longer periods, one patient died of cardiac failure though afebrile, and one died on the fourth day of treatment. Seven patients were clinically cured, though renal lesions, as indicated by regular study of urinary sediments, were still present. The authors maintain that unless organisms in a given patient are proved sensitive to the action of penicillin, it is not worth while attempting treatment. They believe that the long period of treatment, within limits, is more important than the size of the daily dose of the drug.

HYGIENE.

Triethylene Glycol Vapour in Hospital Wards.

MORTON HAMBURGER, JUNIOR, THEODORE T. PUCK AND O. H. ROBERTSON (*The Journal of Infectious Diseases*, May-June, 1945) have studied the effect of triethylene glycol vapour on airborne β hæmolytic streptococci in hospital wards. They used a vapourizing device which kept a moderate fog in the wards at all times, carrying about 0·01 milligramme of triethylene glycol vapour per litre of air. The presence of β hæmolytic streptococci was determined by sucking a measured amount of air through broth, and then plating aliquots in blood agar plates containing one part of gentian violet in 500,000, and also by the use of "settling plates" exposed for varying times in the wards. Five sets of tests were performed in scarlet fever wards, over two monthly periods, with control periods when no triethylene glycol vapour was present. The mean reduction in the number of hæmolytic streptococci recovered was 65%, the figures obtained from settling plates being less favourable than those from air analyses; the cross infections discovered in the patients diminished markedly. The findings in this study are appreciably less than in laboratory studies, in which complete killing of bacteria can be ensured. The reasons for this were thought to lie in the fact that dried dust particles from bedclothes are much less penetrable to the glycol vapour and they may be of such size that effective concentrations of the vapour cannot concentrate around them.

T. T. PUCK, MORTON HAMBURGER, JUNIOR, O. H. ROBERTSON AND VALERIE HURST (*The Journal of Infectious Diseases*, May-June, 1945) have studied further the combined action of glycol vapour and dust control methods on airborne β hæmolytic streptococci in hospital wards. The plan of the previous experiment was repeated with the addition that floors were treated with a solution of urea, 5%, ninol, 3%, and roccal, 1%; and bedclothes, pyjamas and bathrobes were treated with a 2% oil emulsion. Efforts were also made to avoid the production of a fog in one of the wards used, although the glycol vapour was still held at an effective level. Observations were carried out during quiet periods, and during bedmaking. In the first ward the addition of dust control eliminated completely the hæmolytic streptococci during quiet periods, and less than five per ten cubic feet of air were found when beds were being made; for the control periods the figures were ten per ten cubic feet of air during quiet periods, and 105 during bedmaking. Dust control alone effected a marked reduction in the number of hæmolytic streptococci recovered, but the addition of triethylene glycol vapour improved the results further. The total number of organisms in the air was decreased, but not so markedly as the hæmolytic streptococci. The vapour concentrations set at a level below the fogging point were as effective as a supersaturated atmosphere. The authors believe that these methods are practicable, and offer a means of controlling airborne infections in hospital wards.

Prevention of Tuberculosis.

D. M. GIBSON (*The Canadian Medical Association Journal*, October, 1945) presents the results of a survey from the public health angle of 1,000 recent admissions to the Toronto Hospital, Weston, on account of parenchymal pulmonary tuberculosis. No less than 520 of the patients were aged over thirty years. In the age groups under thirty-one years, women preponderated; in the higher age groups men were more numerous than women, especially in the group aged over fifty years. *Mycobacterium tuberculosis* was found in the sputum or gastric contents of 714 of the subjects; in 434 of these instances the organisms were found on direct examination of a smear of the sputum and in another 151 on concentration. Cough was a common finding, and occupational opportunities for infecting other people were plentiful. The author points out that pulmonary tuberculosis is a disease of all ages. From the point of view of prevention, there seems to be an urgent need to discover actively infective patients in the higher age groups at an earlier stage than is often the case at present. In the presence of suspicious symptoms the author urges more alacrity in advising an X-ray examination of the chest. He believes that an extension of the mass survey method is imperative.

An X-Ray Survey of Healthy Troops in Canada.

R. W. BOYD (*The Canadian Medical Association Journal*, January, 1946) states that during 1944 the incidence of tuberculosis was found to be rising in the Canadian army overseas, though no similar rise was detected in troops remaining in Canada. It was decided to conduct a random chest X-ray survey of healthy military personnel in Canada. More than 5,000 soldiers were chosen for examination; all were aged under thirty-five years, had served in Canada continually for eighteen months or more, and had not been radiologically examined during this period. The subjects were chosen at random from the various home war establishments; many were of low category, but none was considered to have active chest disease; each was apparently healthy and able to carry out his work. Single films were taken, 14 inches by 17 inches in size. The findings were as follows (5,200 subjects): active pulmonary tuberculosis, three cases; suspected minimal tuberculosis, eight cases; fibrotic or semicalcified lesions present at enlistment, no change in 28 cases, further resolution or healing in six cases; gross hilar or parenchymal (Ghon) calcification, 59 cases; subacute non-tuberculous pleurisy, one case; pleural thickening and adhesions, (*a*) diaphragmatic (sulcus obliteration), 106 cases, (*b*) apical, four cases, (*c*) interlobar, four cases; progressive heart disease, two cases; atypical pneumonitis or basal infection, four cases; spontaneous pneumothorax, one case; eventration of the diaphragm, one case; the presence of residual lipiodol, two cases. The author concludes that the incidence of unrecognized tuberculosis revealed was less than one per 1,000, and that the findings indicate the need for periodical re-survey of subjects. No evidence was found to indicate that minimal healed lesions or primary complexes incompletely calcified are aggravated as the result of military service.

Streptomycin and "Promin" in Experimental Tuberculosis.

M. I. SMITH AND W. T. McCLOSKY (*Public Health Reports*, September 28, 1945) have investigated the chemotherapeutic action of streptomycin and "Promin" in tuberculosis of guinea-pigs. Two sets of experiments were made, the first to determine whether streptomycin had any ameliorating effect, and the second to ascertain its value as compared with "Promin". Streptomycin is a substance isolated by Waksman and co-workers from *Actinomyces griseus*, and has antibiotic properties against the tubercle bacillus. "Promin" is sodium p-p′ diaminodiphenylsulphone N-N′ didextrose sulphonate. The authors found that the daily intramuscular injection of 5,000 units of streptomycin over a period of ninety days in guinea-pigs infected with a human strain of tubercle bacilli produced a chemotherapeutic effect superior to that obtained with 0·5 gramme per kilogram of "Promin" administered orally each day over the same period. Since the dose of "Promin" used was about half the maximum tolerated dose, while that of streptomycin was less than one-twentieth of the maximum tolerated dose, it appears that streptomycin has a chemotherapeutic index better than ten times that of "Promin". The authors believe it possible that by an increase in the dose of streptomycin and by better methods of administration, its chemotherapeutic effectiveness may be enhanced. In one group of guinea-pigs combined treatment with streptomycin and "Promin" was given; 5,000 units of streptomycin were given each day intramuscularly, and 0·5 gramme of "Promin" per kilogram was given by mouth daily. The authors state that in this group the results were better than any previously obtained under experimental conditions.

British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch of the British Medical Association was held on September 20, 1945, at Sydney Hospital. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital.

Hypertensive Arteriosclerosis with Retinal Changes.

Dr. E. H. Stokes showed a man, aged forty years, suffering from hypertensive arteriosclerosis with retinal changes. The patient had been discharged from the army on April 13, 1942, after two years' service overseas. Apart from his defective eyesight, he complained of frequency of micturition due to polyuria and of dull, generalized headache. He had been a heavy drinker. With regard to his previous health, he had suffered from febrile attacks which he thought were caused by influenza, and while on active service he was incapacitated by sandfly fever. There were no points of importance in the family history.

On examination of the patient, it was noted that his general condition was good. The cardiac apex was not palpable and the aortic second sound was accentuated. The blood pressure readings were 270 millimetres of mercury, systolic, and 170 millimetres, diastolic. The urine contained a heavy cloud of albumin (0·25%); but only an occasional red cell and a few leucocytes and granular casts were found in the centrifuged specimen. The blood urea nitrogen level was 22 milligrammes per 100 millilitres and the blood creatinine content was 1·5 milligrammes per 100 millilitres. The blood urea clearance was 27 millilitres per minute (53% of standard clearance). The urea concentration test gave the following result: before the intake of urea, the percentage of urea in the urine was 1·3 (volume 140 millilitres). One, two and three hours after the ingestion of urea the figures were 1·4% (volume 132 millilitres), 1·5% (volume 112 millilitres) and 1·6% (volume 86 millilitres). The blood count gave results within normal limits, and the blood serum failed to react to the Wassermann test. Changes were observed in the ocular fundi. The arteries and arterioles were thin, the veins were "nipped", and numerous exudates and recent hæmorrhages were present. In the electrocardiogram flattening of the *T* waves in all leads was suggestive of myocardial aortic degeneration. On radiological examination of the heart left ventricular and aortic enlargement was noted. An interesting feature was the presence of numerous fibrolipomata in various parts of the body.

Dr. Stokes said that although the ability of the kidneys to concentrate urea and to clear urea from the blood was impaired, he considered that the retinal changes were due to hypertensive rather than renal disease.

Gastric Syphilis.

Dr. Stokes next showed a man, aged sixty-one years, who had first been examined in 1938, when he was suffering from an anxiety state. At that time it was noticed that his tongue was ulcerated at the edges, and that small patches of leucoplakia suggestive of specific infection were present. His blood serum yielded a completely positive reaction to the Wassermann test. Potassium iodide and mercury were prescribed. He was not examined again until December, 1941, when he complained of nervousness and headache. Glycosuria was found, and the glucose tolerance test produced a mild type of *diabetes mellitus* curve. The condition of the tongue had recurred, as he had not adhered to treatment.

On June 26, 1944, he complained of "indigestion" and a sensation of fullness after food. In September he suffered from an aching pain in the epigastrium. A barium meal examination showed the lumen of the middle third of the stomach to be narrowed. Achlorhydria was noted. Gastroscopy could not be performed, owing to the small size of the stomach. Antispecific treatment (consisting of arsenicals, bismuth, mercury and iodides) was given, but as no obvious improvement occurred, a laparotomy was performed by Dr. R. M. Rawle in December, 1944. A large, rounded mass was found on the lesser curvature of the stomach. No attempt was made to remove it because of the extensive involvement of the stomach. Unfortunately no biopsy was made. Antispecific treatment was continued, but the abdominal mass continued to increase in size, and in May, 1945, a large sausage-shaped tumour was palpable extending across the upper part of the abdomen. X-ray examination showed the lumen of the stomach to have become progressively smaller; but in spite of that condition, the abdominal mass had decreased in size and the patient's general condition had remained good. Dr. Stokes said that owing to the size of the stomach he was able to ingest only small meals. Treatment with a mixture containing potassium iodide (30 grains) and *Liquor Hydrargyri Perchloridi* (one drachm) was being continued. The blood serum now failed to react to the Wassermann test. Dr. Stokes remarked that it was impossible to say definitely that the patient was not suffering from carcinoma of the stomach; but his general condition was in favour of a luetic condition. Plastic induration of the stomach (*linitis plastica*) could arise from both newgrowth and syphilis.

Pulmonary Tuberculosis Treated by Artificial Pneumothorax.

Dr. Stokes then showed a woman, aged twenty-seven years, who in 1932 had suffered from right-sided pulmonary tuberculosis. Artificial pneumothorax had been induced, but after about a year an effusion formed which was aspirated. Adhesions formed between the visceral and parietal pleura, and the heart and mediastinum were displaced to the right. In 1935 the right phrenic nerve was crushed and paralysis of the diaphragm was produced. As the years progressed the right side of the patient's chest became retracted and the movement impaired. At the time of the meeting the cardiac apex was displaced to the right, and bronchial breathing could be heard below the right clavicle, owing to the displacement of the trachea to the right. Dr. Stokes said that he had shown this patient at earlier clinical meetings, but he considered that it would be of interest to the members to see the patient again, as the pneumothorax and the adhesions had produced an effect similar to that of thoracoplasty.

Tuberculous Sinuses.

Dr. Stokes's last patient was a man, aged forty-four years, whose right kidney had been removed in 1936. When examined on August 26, 1943, he was suffering from enlargement of both epididymes, probably due to tuberculous disease. A sinus was present to the right of the anus. He also suffered from a paroxysmal cough. Dulness to percussion, bronchial breath sounds and crepitations were found at the apex of the left lung posteriorly. On X-ray examination of the chest infiltration of the upper lobes of both lungs suggestive of tuberculosis was found. The sputum contained numerous acid-fast bacilli, and the patient reacted to the Mantoux test. The erythrocyte sedimentation rate (by Westergren's method) was 68 millimetres in an hour. After a few months the epididymes became smaller. On November 2, 1944, it was decided to administer a course of old tuberculin, commencing with 0·1 millilitre of a dilution of 1 in 10,000. The patient's weight was ten stone eight pounds. On June 14, 1945, it was noted that a tuberculous cold abscess had formed in the perianal region, and that several sinuses and fistulæ were present. These were injected with cod liver oil on nine occasions. The amount of discharge from them lessened. On August 24, 1945, a bacteriological examination of this discharge was made for the first time. No acid-fast bacilli were found in the smears, but numerous pus cells and Gram-positive and Gram-negative bacilli (some extracellular) were present. The erythrocyte sedimentation rate was 28 millimetres in one hour. The last tuberculin injection was 0·4 millilitre of a 1 in 10 dilution. Dr. Stokes said that the condition of the patient's lungs had remained practically unchanged during the past two years, and the anal and genital condition had shown improvement. It was proposed to continue with the tuberculin treatment.

Clinical Photographs.

Dr. Stokes then showed a series of clinical photographs. Leprosy, Paget's disease, achondroplasia, pigeon breast and Harrison's sulci, retraction of the chest wall after pneumothorax therapy, obesity probably due to hypothalamic disorder, masculinization associated with carcinoma of the adrenal gland, silicosis (X-ray films) and carcinoma of the sigmoid colon (X-ray films) were the subjects illustrated.

Electrocardiograms.

Dr. Stokes finally showed electrocardiograms characteristic of the following conditions: complete heart block in a man who suffered from Stokes-Adams attacks; partial heart block produced in a patient by the administration of digitalis erroneously given under the impression that his heart was diseased, and the normal electrocardiographic tracing of the same patient taken ten days after the cessation of digitalis treatment; auricular and ventricular premature contractions; left axis deviation; left ventricular hypertrophy with anterior cardiac infarction; left ventricular hypertrophy with anterior cardiac infarction and nodal premature contractions; left ventricular hypertrophy with myocardial degeneration; posterior infarction.

Wilms's Tumour.

DR. A. C. TELFER showed a girl in good health, aged two years and four months, who in December, 1944, had undergone a right nephrectomy. The patient had been brought to the hospital suffering from pneumonia, and a huge renal tumour occupying the whole right side of the abdomen was found. The tumour extended from the right side of the diaphragm to the left side of the umbilicus and into the bony pelvis. A diagnosis of Wilms's tumour was made and deep X-ray therapy was commenced. The dose by ionometer was 3,200*r*, extending over a period from September 27 to October 19, 1944. Nephrectomy was performed six weeks after the last treatment.

Dr. Telfer said that no difficulty was experienced in removing the greatly reduced renal tumour. It was only slightly adherent at the upper pole. Microscopic examination of sections of the tumour revealed that no cellular elements were left after deep X-ray therapy. Dr. Telfer said that Willis had stated that in Wilms's tumour secondary extension occurred through veins to the liver, the lungs and also the lymph glands. At the time of the meeting the child was well and showed no evidence of metastases.

Carcinoma of the Bladder with Bilateral Transplantation of the Ureters.

Dr. Telfer then showed a male patient, aged forty-three years, who in December, 1942, had undergone transplantation of both ureters into the sigmoid colon; the patient had what was later microscopically found to be an alveolar carcinoma arising from the transitional epithelium of the bladder mucosa. There was a twelve-day interval between the last transplantation and a subtotal excision of the bladder. Dr. Telfer said that, although the procedure of extraperitonealizing a knuckle of colon was rather more tedious, it lessened the risk of peritonitis. He said that there was a great advantage in operating on one side at a time, in that it did not produce such a shock to the renal mechanism as would simultaneous bilateral transplantation.

Dr. Telfer went on to say that at operation the growth was thought to be invading the perirectal tissues. Nevertheless, it was interesting to see a man who had no trouble with his urinary system at the time of the meeting, who was fit and at full work, and who had no evidence of metastases two years and nine months after subtotal cystectomy.

Adrenal Virilism.

Dr. Telfer then showed a patient of Dr. R. M. Rawle's, who had a carcinoma of the left adrenal gland. The diagnosis of carcinoma was made at laparotomy by Dr. Rawle, who discovered a huge inoperable tumour of the left adrenal gland with metastases in the liver. Biopsy at laparotomy was of no assistance, as it failed to reveal the essential structure; the specimen consisted mostly of necrotic material. The woman, aged forty-one years, had two healthy, adolescent children. She had noticed that five or six years earlier she had lost her menstrual periods, and at approximately the same time she had noticed hair appearing, first on the stomach, then on the breast, chest and back, and lastly on her face. The increased growth of the tumour caused shortness of breath, flatulence, weakness and lassitude. It was only three months prior to her admission to hospital on April 17, 1945, that she had noticed a swelling on the left side of her abdomen. She had lost two stone in weight in that period. Her past and family history contained nothing of significance. The results of pathological tests were of no significance, except for the estimation of 17-ketosteroids, the urinary content of which on April 17 was 296 milligrammes per litre, the twenty-four hour volume being 440 millilitres.

Dr. Telfer said that the most interesting feature of this case, apart from the extraordinary clinical manifestation of adrenal virilism, was the effect of deep X-ray therapy on the excretion of 17-ketosteroids in the urine. The course of deep X-ray therapy was instituted on May 17 and continued to June 20; it reduced the 17-ketosteroids on July 16 to 87 milligrammes per litre, the twenty-four hour volume of urine being 1,570 millilitres. The patient's condition was clinically much improved. The tumour had been reduced in size, and at the time of the meeting the symptoms were greatly ameliorated. Dr. Telfer hoped that the fall in the urinary 17-ketosteroids, indicating as it did destruction of the adrenal cells producing these substances, might also indicate destruction of the malignant cells of the gland.

Peroneal Muscular Atrophy.

DR. H. L. SPEARMAN showed a male patient, aged twenty-nine years, who had complained of weakness in the legs intermittently for ten years, but much more severe in the last four years. It occurred in both legs, but the right leg always seemed the more severely affected. It affected the patient in running, when the knees seemed to "go", and bent, but did not cause him to fall. Sometimes lately he had noticed a twitching in the thighs and a tendency for the right arm to be weak. His father was weak, but there was no family history of the disorder.

On examination of the patient, his gait was normal, and he exhibited wasting in the lower thirds of both thighs and legs, most pronounced in the vasti muscles, which were flaccid. No abnormality of note was detected in the heart, lungs or abdomen, the blood pressure was 130 millimetres of mercury (systolic) and 90 (diastolic), and the thyreoid gland appeared normal. No myasthenic reaction was present, and examination of the nervous system revealed no other abnormality than absence of the right ankle jerk and fibrillation in the muscles of the right thigh.

Dr. Spearman said that the condition was a neuritic type of muscular atrophy with a familial tendency, tending to be arrested at about the fourth decade, and due to primary neurone atrophy of the anterior horn cells and some of the afferent neurones in the cord. Fibrillation occurred if the disease was active. Cycling appeared to be the most effective form of treatment.

Fracture of the Pelvis Complicated by Intrapelvic Rupture of the Urethra.

DR. S. L. SPENCER first showed a wharf labourer, aged forty-three years, who on July 28, 1945, had sustained a lateral crushing injury at hip level. He collapsed with pain in the back, the lower part of the abdomen and the perineum, and was uncertain whether he had tried to pass urine. He had emptied his bladder about one hour before the accident. He was admitted to hospital in a condition of shock two hours after the accident. There were clinical signs of a fractured pelvis. After resuscitation treatment a catheter was passed and a few ounces were recovered of what appeared to be blood-stained urine with the blood fraction predominating. As the catheter had been passed without difficulty, a provisional diagnosis of extraperitoneal rupture of the bladder was made. X-ray examination revealed fractures of all four pubic rami and a slight depressed fracture of the floor of the left acetabulum.

Under "Pentothal" anæsthesia a suprapubic incision was made, and the discovery of a distended bladder made the real diagnosis evident. The prevesical space was filled with blood, blood clot and fluid, which were sucked out. The bladder was then opened extraperitoneally and emptied of urine. A finger introduced into the prevesical space and passed downwards was able to make out the apex of the prostate displaced backwards and lying free. The ends of the ruptured urethra were about an inch and a half apart. A Jacques catheter was passed up the penile urethra, and its end was recovered and drawn up to the suprapubic region. The internal urinary meatus was exposed by retractors placed in the bladder, and a soft rubber catheter with an olivary point was passed downwards along the prostatic urethra. Its end was similarly recovered and brought out. The two ends were then sutured together and used to tow a small de Pezzer catheter from the bladder along the whole length of the urethra, the ruptured portions thus being brought together. The suprapubic wound was closed, a Winsbury-White catheter being left in the bladder and a tube in the cave of Retzius. The latter space was dusted with sulphanilamide powder. The uretheral catheter was fixed in position by a suture passed through the *glans penis*.

After operation, the patient was given a course of sulphathiazole by mouth, and his bladder was irrigated every four hours with a 1 in 4,000 solution of "Monacrin". The drainage tube was removed from the cave of Retzius after three days. There was no evidence of infection of the wound or urinary tract, and after fourteen days the suprapubic and urethral catheters were removed. This was done under "Pentothal" anæsthesia, the urethral catheter being cut at the glans and withdrawn through the suprapubic wound by means of a nylon suture, which had been brought out of the wound and fixed to the skin at the original operation.

Three weeks after the accident urethral bougies were passed without difficulty, and this operation was repeated each week; at the time of the meeting a 12-15 Lister's bougie passed readily along the urethra. The pelvis had required no treatment beyond rest in bed, and eight weeks after the accident the patient was walking and passing his urine freely and with complete control.

Intraperitoneal Rupture of the Urinary Bladder.

Dr. Spencer next showed a man, aged thirty-two years, also a wharf labourer, who on September 5, 1945, had been squeezed against the side of a ship by a bale of wool, which struck the front of his abdomen. He immediately felt pain in the lower part of the abdomen and the epigastrium, which remained severe and continuous until operation. When the patient was examined four hours after the accident he was complaining also of pain in the shoulders. Generalized tenderness and rigidity were present over the abdomen, but there was no definite dulness in the flanks. A catheter passed along the urethra evacuated only about an ounce of slightly blood-stained urine. As the patient stated that he had not passed urine for seven hours before the accident, and that he had consumed about six beers in this time, the diagnosis presented no difficulty. There was no evidence of injury to the bony pelvis.

Under general anæsthesia the abdomen was opened above the pubis. The peritoneal cavity appeared to contain only a small quantity of urine, and in all about six to eight ounces were removed by sucker. No pronounced peritoneal reaction was observed. On the fundus of the bladder, and slightly to the left of the mid-line, was a rent running antero-posteriorly for about two inches, and involving all coats of the viscus for the whole of its length. The extraperitoneal aspect of the bladder was exposed, and a Winsbury-White tube was introduced through a small incision. The rent in the bladder was then sutured in layers, plain gut being used, and the abdominal wound was closed around the catheter without drainage of either the peritoneal cavity or the cave of Retzius. Five grammes of sterile powdered sulphanilamide were left in the peritoneal cavity, and a similar quantity in the cave of Retzius and the abdominal wound.

After the operation a course of sulphamerazine was given. The suprapubic tube was removed on the ninth post-operative day, and the wound soon became dry. At the time of the meeting, sixteen days after operation, the patient was able to pass urine normally, and could hold his urine through the ordinary sleeping hours without discomfort.

NOTICE.

THE General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed or will resume practice as from the dates mentioned:

Dr. L. W. Tunley, Mayne Street, Gulgong, New South Wales (January 31, 1946).
Dr. A. R. H. Duggan, 185, Macquarie Street, Sydney (February 21, 1946).
Dr. A. M. B. Grant, 147, Macquarie Street, Sydney (February 11, 1946).
Dr. J. F. C. C. Cobley, 141, Macquarie Street, Sydney (February 25, 1946).
Dr. H. N. Merrington, 49, Belmore Road, Randwick, New South Wales (March 1, 1946).
Dr. Trevor A. Parry, "Alexandra", Wickham Terrace, Brisbane (May, 1946).
Dr. E. P. Row, Brisbane Clinic, Wickham Terrace, Brisbane (February 20, 1946).
Dr. C. M. McCarthy, 135, Macquarie Street, Sydney (March 4, 1946).
Dr. C. S. Colvin, 45, Anson Street, Orange, New South Wales (March 5, 1946).

Naval, Military and Air Force.

DECORATIONS.

LIEUTENANT-COLONEL LESLIE ERNEST LE SOUEF has been created an officer of the Military Division of the Most Excellent Order of the British Empire "for bravery and devotion to duty in Greece and Crete".

Correspondence.

AN UNUSUAL CASE OF MALARIA.

SIR: I wish to report a case of malaria, contracted by a boy, aged eighteen years, who had never been outside New South Wales.

This boy was a clerk, working at Wellington, and had lived there since June 8, 1945. On February 2, 1946, he returned to his home in Orange, having been sick and feverish for one week.

Prior to his stay in Wellington, he had lived all his life in Orange, except for a visit to Sydney during Christmas, 1944, and a visit to Mandurama for two weeks in the winter of 1945.

His history was that of fever and violent shivering attacks, usually occurring about 10 a.m. each day. The parasite of benign tertian malaria was seen microscopically in a blood smear.

Yours, etc,
Orange, R. F. MATTHEWS, M.B., B.S.
Undated.

EPIDEMIC POLYARTHRITIS.

SIR: With reference to the report of Major P. G. Dowling (THE MEDICAL JOURNAL OF AUSTRALIA, February 23, 1946) and earlier reports by Halliday and Horan, it is with some diffidence that I would draw your attention to an article in your journal of May 5, 1928, entitled "An Unusual Epidemic". The epidemic referred to by me in 1928 appears to be identical with that described by the above writers. It occurred in the Riverina and west of New South Wales in March-April, 1928.

My report was sent to the late Professor A. E. Mills, who added the title and sent it to your journal for publication. Some years later, a few examples of an identical disease were seen by me in the Torres Strait area during the wet season. In 1928 I suggested that the disease was caused by biting flies that are so prevalent in the bush during the normal wet season in the north. The oubreak in the Riverina was associated with an abnormally wet season and a plague of these flies, as well as mosquitoes (culex).

A feature of this epidemic was the freedom of town-dwellers as opposed to the widespread incidence among country dwellers.

A further communication (THE MEDICAL JOURNAL OF AUSTRALIA, June 9, 1928) discussed the differential diagnosis of dengue and the unusual epidemic.

Yours, etc.,
Canberra, J. R. NIMMO.
February 25, 1946.

THE TREATMENT OF SCABIES.

SIR: During the war years there have been many articles in the journals, particularly the *British Medical Journal*, on the treatment of scabies. As recently as August 25, 1945, Lieutenant-Colonel Hellier reported in the *British Medical Journal* that D.D.T. has no preventive action against the acquirement of scabies. In view of this, I consider it worth reporting a case treated successfully with D.D.T. The patient, who was personally scrupulously clean, contracted scabies in 1942. When first seen he complained of pruritus in the left axilla. *Acarus scabiei* was found. No pruritus nor parasites were detected elsewhere. I advised shaving the axilla and prescribed *Unguentum Sulphuris*. Parasites appeared on other parts, concentrating mainly on the pubes. Sulphur treatment interspersed with home remedies was persisted with for three years. In October, 1945, when I was first able to obtain a small supply of D.D.T., I had compounded a solution of 2·5% D.D.T. in "Toxol", a proprietary preparation, as an insecticide. I supplied a few ounces to the patient and advised impregnating his underclothes, singlet and short underpants, by turning them inside out, spraying them with the solution by means of an insect spray, and allowing to dry overnight—the impregnated clothes to be worn throughout the day, pyjamas untreated at night, the routine to be followed daily for seven days. At the end of the third day the parasites had apparently disappeared, but one was found on the fourth day. The treatment was discontinued on the eighth day. The application caused no discomfort and there has been no reappearance of the parasites in the ensuing four months. The type of case and persistence of infestation would tend to indicate that the precipitate deposited in the clothes was definitely the cause of cure, so that either the D.D.T., the "thanite" (a pyrethrum compound contained in the toxol), or a compound of both was the effective agent. Experiments conducted at the Australian Power Alcohol Company, Sarina, tend to show that D.D.T. does not always cause instantaneous paralysis or death, but insects may take from two hours to several days to die. Pyrethrum compounds, however, are said to have this "knock-down" effect, so that a combination of both may approach the ideal. As scabies is a rare complaint in my practice, I have no means of testing the various solutions, but I should say it is worth investigating as a much less unpleasant and repulsive method of treatment than is commonly used. Mr. Somerville, of the Australian Power Alcohol Company, drew my attention to the fact that D.D.T., when dissolved in fat soluble solutions, will penetrate the skin with toxic effect, and this has been demonstrated by several patients whom I have recently seen suffering from dermatitis accompanied by intense pruritus after being sprayed with an insecticide containing D.D.T.

Yours, etc.,
J. G. MORRIS.
Sarina,
Queensland,
February 19, 1946.

INGUINAL HERNIA AND ITS REPAIR.

SIR: The excellent article by Lieutenant-Colonel Harley Turnbull which appeared under the above heading in your journal of January 26, 1946, needs no amplification by me; having, however, also been a surgeon at the hospital to which Lieutenant-Colonel Turnbull refers during the greater part of the period under review and presuming, I hope correctly, that the series of seven hundred operations referred to includes two hundred and fifty-four performed by me and an unknown number by others under my supervision, I do not think it would be out of place if I were to state that I am in practically complete accord with all his statements.

It might be of interest to your readers if I were to summarize from my records the operations which I personally performed.

	Left.	Right.	Total.
Indirect herniæ:			
Herniotomy only	43	25	68
Modified Bassini repair	26	35	61
Direct herniæ	30	35	65
Direct and indirect herniæ	10	11	21
Total "primary" herniæ	109	106	215
Recurrent herniæ:			
Indirect	4	17	21
Direct	5	8	13
Direct and indirect	2	3	5
Total recurrent herniæ	11	28	39

In twenty-three instances the hernia was bilateral, some unfortunately being recurrences.

From the above figures it can be seen that of primary hernia operations: (i) approximately equal numbers occurred on either side; (ii) approximately 30% were treated by simple excision of the sac; (iii) approximately 30% were direct; (iv) in 10% direct and indirect sacs were present. Of recurrent herniæ (some following two previous operations): (i) 70% occurred on the right side; (ii) over 50% were indirect; (iii) over 10% had both direct and indirect sacs.

Patients for herniotomy only were carefully chosen and the operation was performed through a minimal incision placed over the site of the internal inguinal ring with no disturbance of the cord from its bed. Fine silk was always employed, and, in addition to doubly transfixing and ligating the neck of the sac, it was anchored to the transversalis fascia about one and a half centimetres above the internal ring. In such cases patients were permitted to get up a few days after operation; I know of but one in which recurrence took place, though doubtless there have been others.

Repairs were done by a technique almost identical to that described by Lieutenant-Colonel Turnbull, modified to suit individual cases.

I lay great stress on the repair of the transversalis fascia; in my opinion, apart from the complete removal of the sac, it is the most important factor in herniorrhaphy.

The proportion of direct and "bisac" herniæ may seem unduly high, but it must be remembered that it was my policy to operate on the "snags" leaving most of the presumably less difficult cases to my junior colleagues.

In all cases of direct hernia an attempt was made to remove the sac. Where both direct and indirect sacs were present each was removed separately.

With few exceptions all the recurrent cases followed on some type of repair operation, though it was often difficult to ascertain what had been done by the previous surgeon.

Spinal anæsthesia was employed in practically every instance, and no skin preparation other than shaving and washing was carried out in the wards. Undiluted "Dettol" and spirit, later "Zephiran" and spirit, were used in the theatre. I recall only two cases of wound sepsis both of whom discharged silk stitches and, for all I know, may still be doing so.

Yours, etc.,
L. S. LOEWENTHAL,
Lieutenant-Colonel, Australian Army
Medical Corps, Australian Imperial
Force.
Sydney,
February 20, 1946.

AUSTRALIA AND SCIENCE: THE UNIVERSITY OF SYDNEY AND SCIENTISTS.

SIR: To do justice to the University of Sydney an insignificant error in your leading article on "Australia and Science" should be corrected. Not all senior lecturers at that institution receive £600 *per annum*; a few have by lapse of time earned the princely annual income of £750. When allowance is made for the purchasing power of money, it is doubtful if this maximum salary for senior lecturers is worth more than was £300 in the first decade of this century—in the days when treasurers had not conceived the thought of assuaging their voracious appetites with ever larger bites of income tax. It would be interesting to know what monetary value the university administrators of those days placed on the services of senior lecturers.

Professors, like lecturers, must live and provide for their wives and children; so the Senate has wisely increased the minimum professorial salary from £1,100 to £1,250 *per annum*. If one reads correctly a very recent advertisement, it would appear that as an added inducement to become, or to remain, a professor, the Senate is offering to pay £400 *per annum* superannuation in addition to the benefits derived from the already existing contributory scheme. It would appear that the Senate considers that the university derives two-thirds as much benefit from a professor in retirement as from a senior lecturer in active employment. It might be more equitable, if not more politic, to distribute some of these retirement bounty funds among the less well paid members of the staff, for it must be unconscionably difficult for a senior lecturer with several children—and one assumes that academically it is conceded that they may be allowed such luxuries—to provide the bare necessities of life and so to free himself from domestic chores that he will have at least some opportunity and leisure to think. One is conservative enough to believe that a university does want its lecturers—and professors—to be able to think—an exercise which is not performed most effectively while fighting to keep the wolf from the door with a broom in one hand and a napkin in the other.

A regrettable feature of the poor remuneration of the staff of the University of Sydney is that the salaries paid by such an institution are often used as an argument for keeping salaries of university graduates at undesirably low levels. It would seem that there is a fear lest a more adequate financial reward paid to an extra-mural graduate might raise his status above the academic level.

Perhaps it is a related line of thought which leads the University of Sydney to pursue its present miserly policy in the matter of lecturers' salaries. Possibly their status more than compensates for their lack of income; but if so, why should the enjoyment of professorial status need to be eked out by salaries about twice those paid to senior lecturers and supplemented after retirement by an annual bonus of £400—paid presumably to compensate for status then lost.

Might one suggest that while such inequitable anomalies exist the motto of the university should be *"Eadem mens in corpore insano"*. There are, however, more important matters than salaries or mottoes. Neither a change of motto nor a revision of staff salaries will revivify the intellectual life of a university which lacks the genius to breathe into its teachers and its students that divine longing for knowledge and for the unfettered exercise of original and critical thought which led the students of the middle ages to form the cultural nuclei from which the most famous universities have grown and descended. Between teacher and student there must exist a bond of mutual intellectual inspiration, each being for the other a fertile stimulus to think, to seek and to learn. Poor teachers will not inspire good students, poor students will drive out the best of teachers. It is the duty of university administrators to find inspiring and stimulating teachers and to provide them with ample facilities to satisfy their intellectual desires and with salaries adequate to supply their reasonable material needs. It is for the community to provide students in whom the childhood spirit of inquiry has survived till adolescence, unextinguished by an educational system which exalts dogma, decries originality and stifles criticism. Ultimately a community fosters such universities as it deserves. Unless a university is an intimate part of a worthy body corporate, of a community which values ethics and intelligence more than estate or material success, and which thinks the game of more importance than the score, what present or future greatness can it hope for? Universities are not great by virtue of the hordes of students which infest their halls, but by reason of the intellectual and ethical inspiration which flows from them, to benefit not only the communities which brought them into being, but all humanity.

Yours, etc.,

16, David Street, A. J. CANNY.
Clifton Gardens,
New South Wales.
March 1, 1946.

ULCERS IN THE MOUTH: AN APPEAL FOR HELP.

SIR: In reply to the appeal for help of the doctor suffering from painful mouth sores, I am glad to be able to advise him. The treatment during the acute stage is: penicillin lozenges 1,000 units each, two hourly to be kept in mouth, for two or three days.

I witnessed five favourable results of such treatment during my recent stay at a New York general hospital.

Yours, etc.,

New Farm, I. ROXON-ROPSCHITZ.
Brisbane,
Undated.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF LUMBAR INTERVERTEBRAL DISK DISEASE.

SIR: Dr. Miller has stated (THE MEDICAL JOURNAL OF AUSTRALIA, February 23, 1946) that anyone with little experience, after reading our papers, might be left with the idea that the pathology of low back pain is simple, diagnosis not difficult, and neurological examination unnecessary. In the great majority of patients this is so.

But Dr. Miller is not justified in suggesting that the impression might be gained that Dr. Clark and I advocate certain surgical treatment as orthodox and obviously beneficial. As a matter of fact I stated that "if one recognizes the early stages of disk disease, one will adopt treatment which will, I hope, render these spectacular surgical measures much less frequently necessary than at present", and Dr. Clark spent quite some time in discussing our surgical failures.

My reasons for regarding minor low back strains as diskogenic have been stated previously, and to reiterate them here would be redundant.

Dr. Miller states that, if pain is relieved by injecting a muscle with a local anæsthetic, then that pain is generated in the muscle. I would reply that this does not necessarily mean that the primary cause of the pain is in the muscle. The work of Elliott on electromyographic studies in sciatica and of Lewis on the pain-producing factor in muscle would appear to offer a simple explanation of the point raised by Dr. Miller. A disk lesion, by involving motor fibres in nerve roots, either directly or reflexly, can and does lead to areas of spasm in muscle. These areas may be painful, and the pain may be relieved by injecting a local anæsthetic.

I would direct Dr. Miller's attention to three articles in *The Lancet* of October 6, 1945. Crisp condemns a diagnosis of fibrositis and discusses minor and major disk injuries. Burns and Young state that the chief cause of recurrent low back pain is protrusion of a disk and mention sacro-iliac strain and fibrositis as ill-defined lesions of doubtful frequency. Cyriax will not accept a diagnosis of postural backache, is sceptical of the existence of a widespread lumbar fibrositis and has not diagnosed it in his last five hundred cases of low back pain. Sir William Gowers, who introduced the term fibrositis, admitted that he had no microscopical evidence of its existence—evidence which, according to Elliott, is still lacking forty years later. Reinforced, therefore, by these and other opinions, for example, those of Dandy and Keys, I can offer Dr. Miller little expectation of fulfilling his hope that I will allow the lumbar muscles many "pains in their own right".

Yours, etc.,

Mount Hawthorn, JAMES H. YOUNG.
Western Australia,
March 2, 1946.

ON THE PRICKLY HEAT.

SIR: The authors of the article "On the Prickly Heat" which appeared in THE MEDICAL JOURNAL OF AUSTRALIA of December 22, 1945, deserve great credit for their enthusiasm. It is obvious that they worked under difficulties to collect their data, and that circumstances beyond their control prevented them from obtaining a larger number of cases.

It is, nevertheless, a pity that they have drawn so many unjustified conclusions from such preliminary work. It would take too much space to discuss their findings in detail, but, by way of example, one may refer to their conclusion that light complexion is a factor which increases the liability of a person to prickly heat. They found that, of thirteen people with light complexion, 53·8% developed a rash, whereas of 33 people with medium or dark complexion, only 33·3% developed a rash. Now, it can readily be shown that if there were no difference between the incidence of prickly heat amongst light-skinned people, on the one hand, and medium-skinned and dark-skinned people on the other, samples of 13 of the former and 33 of the latter would show a difference at least as great as that exhibited above in about 20 out of 100 instances. In other words, there is a one in five chance that the difference obtained by the authors resulted from a sampling variation and not from a real difference in the original groups.

The authors state that they realize that the numbers concerned are small "and therefore subject to the usual statistical fallacies". It is widely believed that conclusions drawn from small numbers of cases are necessarily uncertain and that reliable results can be obtained only when the numbers investigated are large. There is an element of truth in this, but it must be remembered that there is no fixed rule as to what constitutes an adequate number of cases. This is a relative matter: it is relative to the variation encountered. A physicist may have the conditions of his experiment so well controlled that he will put reliance on a single result. It is, therefore, not satisfactory for authors to issue a general warning that they have only a small number of cases, which are subject to the usual statistical fallacies, especially if they go on to draw definite conclusions from their data. An investigator can sometimes be readily forgiven for having small numbers of cases, but not so readily excused for publishing untenable conclusions drawn from his study of them.

Yours, etc.,

43, Torrens Street, COLIN WHITE.
Braddon,
Canberra.
March 2, 1946.

Medical Practice.

DANGEROUS DRUGS REGULATIONS OF VICTORIA.

THE attention of Victorian medical practitioners is directed to the following amendments of the Dangerous Drugs Regulations which were published in the *Victoria Government Gazette* of September 19, 1945.

> 2. At the end of Regulation 18 in the "Dangerous Drugs Regulations, 1930", add the following clause:
>
> (1) No person shall dispense a prescription for a dangerous drug, which prescription bears a date more than six months prior to its presentation.
>
> 3. Regulation 34 of the "Dangerous Drugs Regulations, 1930", as amended by the "Dangerous Drugs

Regulations, 1932", is hereby rescinded, and the following regulation shall be substituted therefor, namely:

(34. (1)) No person, except as otherwise hereinbefore provided, shall dispense any prescription containing any specified drug unless—

(a) such prescription bears the signature of the medical practitioner or veterinary surgeon or dentist by whom it purports to be given, and

(b) he has no reason to suppose that the prescription is not genuine.

(2) Such prescription shall not be dispensed more than once unless the prescriber has indicated on the face of the prescription that it is to be dispensed more than once at a specific interval or intervals.

(3) The prescription shall be marked, stamped or legibly inscribed by the dispenser with the name of the chemist dispensing it and with the date on which it is dispensed.

(4) The person who dispenses the prescription on the last occasion permitted under these regulations as determined by clause (2) hereof shall in addition to the requirements of clause (3) hereof also stamp, mark or inscribe in durable and legible letters across the prescription the word "Cancelled".

(5) A prescription for a specified drug when cancelled must be retained by the chemist dispensing it on a special file kept for the purpose for a period of at least two years.

(6) No person shall dispense a prescription for a specified drug which prescription bears a date more than six months prior to its presentation.

(7) The provisions of Regulations 33 and 34 (2) shall not apply to the sale or delivery of any specified drug by a registered pharmaceutical chemist on the certificate or written authority signed by a duly qualified medical practitioner, stating that any drug is required for a person suffering from epilepsy or any chronic or malignant disease: Provided that such certificate or authority is dated and delivered to the registered pharmaceutical chemist by the medical practitioner prior to the first sale or delivery of such drug, and that the original prescription or written order is retained by the said chemist and attached to the prescription book opposite the entry required to be made by him under the regulations made under the *Medical Act*, 1928: Provided further that no sales or deliveries shall be made after six months from the date of issue of such certificate or authority.

THE POLICE OFFENCES (AMENDMENT) ACT OF NEW SOUTH WALES.

The following amending regulation under the *Police Offences (Amendment) Act*, 1908, of New South Wales, as amended by the *Police Offences (Drugs) Act*, 1927, and the *Police Offences Amendment (Drugs) Act*, 1934, was published in the *New South Wales Government Gazette*, Number 8, of January 25, 1946.

Regulation 19 is amended by the addition of the following new paragraph.

(7) No person shall dispense any prescription for a drug or supply a drug upon any prescription which bears a date more than six months prior to its presentation.

Post-Graduate Work.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE'S PROGRAMME FOR APRIL.

The Melbourne Permanent Post-Graduate Committee announces the following programme for April, 1946:

Continuous Refresher Course.

The second series of refresher classes for service and ex-service medical officers will commence on April 1. It will be conducted on four days of each week at the Royal Melbourne, The Alfred, Saint Vincent's and Children's Hospitals, and will run for two months.

University Classes.

University classes for Part I of the higher degrees and diplomas, commenced in March, will be continued.

Course for M.D. (Part II) and M.R.A.C.P.

The series of clinical lecture-demonstrations designed for candidates for the M.D. (Part II) and M.R.A.C.P. examinations will be continued on Tuesday afternoons from 2.15 p.m.: April 2, by Dr. L. E. Hurley on "Chronic Diarrhœa". April 9, by Dr. W. S. Newton on "Pulmonary Tuberculosis". April 16, by Dr. J. G. Hayden on "Hepatic Disorders". April 30, by Dr. C. H. Fitts on "Modern Diagnostic Methods in Cardiac Conditions".

Course for Teachers.

The course on modern methods and technique in teaching will be concluded in April with the following demonstrations in the Arts Building, Melbourne University, at 8 o'clock p.m.: Thursday, April 4: (a) Films. (b) The question of effective speech in lecturing and teaching. Thursday, April 11: Short lecturettes, with discussion and general comment. Both classes will be conducted by Professor Browne.

Enrolments for courses should be made with the Secretary, Post-Graduate Committee, College of Surgeons, Spring Street, Melbourne, C.1.

OVERSEAS TRAVELLING FELLOWSHIPS.

The following notes, which may assist candidates for the overseas fellowships of the Nuffield Foundation, the Rockefeller Foundation and the Carnegie Trust in providing the information required in the application form, are published at the request of the Acting Director-General of Health, Canberra.

Name of Foundation or Trust.—Only one application form need be completed. Should a candidate desire to be considered for another fellowship, in the event of an application for his first choice being unsuccessful, he may state his order of preference in a covering note attached to his application.

Details of Teaching or Research Appointment.—Candidates who have at present no such appointment, but have applied for one, and are awaiting the result of the application, should state these details.

Subject of Proposed Study or Research in Detail.—The detail supplied should be sufficient to inform the Selection Committee of the candidate's general intentions and desires, so that the Foundations or other appropriate bodies may place him to his best advantage on arrival overseas.

Department, University, College, Hospital or Clinic where it is Proposed the Work will be Carried Out.—Many candidates may be unable to give the necessary details. They may rest assured that failure to do so will not prejudice their application, but that the Selection Committee and the Foundation concerned will give every assistance to ensure that Fellows obtain the best available facilities for their studies or researches.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Commins, Lloyd Angus, M.B., B.S., 1940 (Univ. Sydney), 179, Wardell Road, Dulwich Hill.

Croese, Kelvin Xavier, M.B., B.S., 1944 (Univ. Sydney), "Greenleaves", Raymond Terrace, New South Wales.

Bellemore, Charles Francis, M.B., B.S., 1943 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.

Musso, Fedele John Andrew Leo, M.B., B.S., 1945 (Univ. Sydney), 469 Forest Road, Penshurst.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Higham, Robert Harvey, M.B., B.S., 1945 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Horsman, Sherwood Arthur, M.B., B.S., 1940 (Univ. Sydney), NX138194, Captain, D.D.M.S., N.S.W. L. of C. Area.

Ireland, Joseph Frank, M.B., B.S., 1940 (Univ. Sydney), NX104569, Captain, 1, Transvaal Avenue, Double Bay.

Kirtle, Patricia, M.B., 1931 (Univ. Sydney), Broughton Hall, Leichhardt.

Macbeth, Robert Duncan, M.B., B.S., 1940 (Univ. Sydney), 13, Iluka Road, Mosman.
McManis, Arthur Geoffrey, M.B., B.S., 1936 (Univ. Sydney), 283, Cleveland Street, Redfern.
Millingen, Keith Samuel, M.B., B.S., 1945 (Univ. Sydney), Sydney Hospital, Sydney.
Moseley, Moira Shirley, M.B., B.S., 1943 (Univ. Sydney), 94A, Birriga Road, Bellevue Hill.
Orban, Thomas Desiderius, M.B., B.S., 1945 (Univ. Sydney), Sydney Hospital, Sydney.
Rich, David Louis, M.B., B.S., 1945 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
Richards, Charles Rowland Bromley, M.B., B.S., 1939 (Univ. Sydney), 80, Kensington Road, Summer Hill.
Schuster, Elizabeth Mary, M.B., B.S., 1945 (Univ. Sydney), Broken Hill and District Hospital, Broken Hill.
Scott-Young, Norman Reginald, M.B., B.S., 1941 (Univ. Sydney), 108, Wangarella Street, Balgowlah.
Stanley, Malcolm Roberts, M.B., B.S., 1941 (Univ. Sydney), 32, Sutherland Road, Beecroft.
Taylor, John Lindsay, M.B., B.S., 1939 (Univ. Sydney), Prince Henry Hospital, Little Bay, Sydney.
Williams, John Robert Trevor, M.B., B.S., 1945 (Univ. Sydney), Base Hospital, Dubbo.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of *The Medical Acts*, 1939 *to* 1940, of Queensland, as duly qualified medical practitioners:

Macindoe, Philip Hudson, B.S., 1935 (Univ. Sydney), "Merchiston", Garfield Drive, Paddington, Brisbane.
Murphy, Gregory Bernard Vincent, M.B., B.S., 1932 (Univ. Melbourne), M.D., 1938 (Univ. Melbourne), M.R.A.C.P., 1938, M.R.C.P. (London), 1940, Lester House, Wickham Terrace, Brisbane, B.17.

The undermentioned additional qualification has been registered:

Macindoe, Philip Hudson, Wickham House, Wickham Terrace, Brisbane, B.17, (M.B., 1935, Univ. Sydney), F.R.C.S. (Edinburgh), 1937.

A MEMORIAL TO THE LATE PROFESSOR JAMES THOMAS WILSON.

AN appeal is being made by the University of Sydney Medical Society for funds to establish a memorial to the late Professor James Thomas Wilson. The society suggests that the memorial be an annual prize in anatomy open to students in medicine. Contributions may be sent to Mr. I. J. Hunter at the Old Medical School; cheques should be made payable to the "Wilson Memorial Fund". Mr. W. A. Selle, Professor A. N. Burkitt and Mr. I. J. Hunter are trustees of the fund.

Obituary.

WILFRED VICKERS.

WE regret to announce the death of Dr. Wilfred Vickers, which occurred on March 9, 1946, at Parramatta, New South Wales.

Medical Appointments.

The following have been appointed honorary clinical assistants at the Royal Adelaide Hospital: *Medical Section:* Dr. R. N. C. Bickford, Dr. J. M. Bonnin, Dr. A. H. Finger, Dr. E. Flaum, Dr. J. F. Frayne, Dr. O. B. Lower, Dr. I. S. Magarey, Dr. M. W. Miller, Dr. J. M. Pedler, Dr. R. A. A. Pellew, Dr. C. T. Piper, Dr. C. B. Sangster, Dr. F. G. T. Turner, Dr. R. F. West. *Surgical Section:* Dr. J. R. Barbour, Dr. N. J. Bonnin, Dr. A. G. Campbell, Dr. J. R. Cornish, Dr. D. C. Dawkins, Dr. G. M. Hone, Dr. J. E. Hughes, Dr. W. W. Jolly, Dr. S. Krantz, Dr. J. R. Magarey, Dr. N. H. Munday, Dr. A. C. McEachern, Dr. D. G. McKay, Dr. L. J. T. Pellew, Dr. J. L. S. Scott, Dr. G. H. Solomon. *Allergy Clinic:* Dr. J. E. Bateman. *Dermatological Section:* Dr. W. Gilfillan, Dr. C. H. Schafer, Dr. A. J. Hakendorf, Dr. F. G. T. Turner. *Radium Section:* Dr. B. S. Hanson. *X-Ray Section:* Dr. B. C. Smeaton, Dr. B. S. Hanson. *Ophthalmological Section:* Dr. D. O. Crompton, Dr. T. L. McLarty, Dr. S. Pearlman. *Orthopædic Section:* Dr. N. S. Gunning, Dr. N. P. Wilson.

Diary for the Month.

MARCH 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Ethics Committee.
MARCH 20.—Western Australian Branch, B.M.A.: General Meeting.
MARCH 21.—Victorian Branch, B.M.A.: Executive Meeting.
MARCH 21.—South Australian Branch, B.M.A.: Council Meeting.
MARCH 22.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 26.—New South Wales Branch, B.M.A.: Council Quarterly.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

HONORARY MEDICAL STAFF: THE ROYAL NORTH SHORE HOSPITAL OF SYDNEY.—Applications are invited for appointment to the Honorary Medical Staff of the Royal North Shore Hospital of Sydney, all appointments having become vacant by effluxion of time. During the war temporary appointments only have been made. The appointments are for Honorary Medical Officers and Assistant Honorary Medical Officers, and the duration of appointment is four years. There are also appointments for Honorary Clinical Assistants for the duration of one year. Owing to the war, no appointments (other than temporary appointments) have been made since 11th March, 1940. A detailed list of appointments follows in which appear the names of retiring members of the staff (other than temporary appointees) who are eligible for re-appointment. Where there is no such retiring member eligible for re-appointment, a vacancy is indicated. Applicants may apply for the position of Honorary Medical Officer and must state whether or not they wish to apply for the position of Assistant Honorary Medical Officer or Clinical Assistant in the event of not being appointed to a more senior position. Applicants should give details of experience, degrees, diplomas and age and should attach copies of credentials. They should also state the duration and nature of service in the 1914-1918 or 1939-1945 war. Forms of application may be obtained from the undersigned. Retiring members of the staff are not required to furnish additional credentials, but must make application for re-appointment. Retiring members who apply for a position senior to that which they now hold should furnish any additional credentials. Should any successful applicant (except Clinical Assistants) who is still on war service be unable to take up his appointment on the due date the Board of Directors will grant leave until his return. The positions are as follow:

Honorary Medical Officers.—Physicians—three (3), Dr. W. W. Ingram, 2 vacancies. Physician in Charge of Pulmonary Unit—one (1), Dr. Cotter Harvey. Radium Therapeutist—one (1), Dr. Harold J. Ham. Psychiatrist—one (1), Dr. D. W. H. Arnott. Dermatologist—one (1), Dr. F. C. Florance. Cardiologist—one (1), Dr. A. J. Hood Stobo. Physician to Allergy Clinic—one (1), Dr. Bernard M. B. Riley. Surgeons—three (3), Dr. H. Hunter Jamieson, 2 vacancies. Gynæcologists and Obstetricians—three (3), Dr. H. Leaver, Dr. Ossian Robertson, Dr. Angus J. Murray. Ophthalmic Surgeon—one (1), Dr. W. M. C. MacDonald. Ear, Nose and Throat Surgeon—one (1), Dr. E. P. Blashki. Orthopædic Surgeon—one (1), Dr. A. R. Hamilton. Urologist—one (1), Dr. R. J. Silverton. Thoracic Surgeon to Pulmonary Unit—one (1), Dr. M. P. Susman. Surgeon in Charge, Plastic and Facio-Maxillary Unit—one (1), 1 vacancy. Surgeon for Venereal Diseases—one (1), Dr. C. J. Wiley. Radiologists—four (4), Dr. K. Firth Vickery, Dr. Paul Tillett, 2 vacancies. Anæsthetists—three (3), Dr. J. F. McCulloch, Dr. W. G. Holt, Dr. C. N. Paton. In the event of any Assistant Honorary Medical Officer being promoted to the position of Honorary Medical Officer, an additional vacancy will be created for an Assistant Medical Officer.

Assistant Honorary Medical Officers.—Physicians—three (3), Dr. Douglas Anderson, Dr. B. T. Shallard, Dr. S. D. Allen. Physician to Pulmonary Unit—one (1), Dr. G. Bruce White. Physician to Allergy Clinic—one (1), Dr. T. A. Glennie Holmes. Dermatologist—one (1), Dr. W. K. Myers. Surgeons—three (3), Dr. Basil W. B. Riley, Dr. L. S. Loewenthal, Dr. R. A. Money. Gynæcologists and Obstetricians—three (3), Dr. Stuart B. Studdy, Dr. A. A. Moon, Dr. R. H. Macdonald. Ophthalmic Surgeons—two (2), Dr. G. Appel, 1 vacancy. Ear, Nose and Throat Surgeon—one (1), Dr. A. Lynton Clowes. Orthopædic Surgeon—one (1), Dr. W. Laurence Macdonald. Urologist—one (1), Dr. Colin M. Edwards. Dental Surgeon to Plastic and Facio-Maxillary Unit—one (1), 1 vacancy. Surgeon for Venereal Diseases—one (1), Dr. A. Fitzgerald Janes. Physiotherapist—one (1), Dr. A. L. Ducker. Radium Therapeutist—one (1), Dr. L. S. Loewenthal. In the event of any Clinical Assistant being appointed to the position of Honorary Medical Officer an additional vacancy for an Honorary Clinical Assistant will be created.

Honorary Clinical Assistants.—Medicine—three (3), Dr. J. Z. Huie, 2 vacancies. Surgery—three (3), Dr. Eric Goulston, Dr. C. H. Wickham Lawes, Dr. Kathleen C. Cuningham. Gynæcology and Obstetrics—three (3), Dr. J. Cameron Loxton, Dr. E. Collins, 1 vacancy. Orthopædics—one (1), 1 vacancy. Physiotherapy—one (1), 1 vacancy. Venereal Diseases—one (1), Dr. N. W. Francis. Pulmonary Diseases—one (1), Dr. C. G. Bayliss. Allergy—one (1), 1 vacancy. Psychiatry—one (1), 1 vacancy. Applications should be addressed to reach the undersigned not later than 31st May, 1946, and envelopes should be endorsed: "Application Honorary Medical Staff."—J. H. WARD, Secretary, Crow's Nest.

WOMEN'S HOSPITAL, CROWN STREET: HONORARY MEDICAL STAFF.—Applications are hereby invited for the following positions on the hospital staff: Honorary Obstetricians and Gynæcologists (4), Honorary Assistant Obstetricians and Gynæcologists (5) — one new appointment, Honorary Relieving Assistant Obstetrician and Gynæcologist—one new appointment, Honorary Ophthalmic Surgeon, Honorary Pædiatrician—one new appointment, Honorary Assistant Pædiatrician—one new appointment, Honorary Physician, Honorary Assistant Physician — one new appointment, Honorary Surgeon, Honorary Urologist, Honorary Ear, Nose and Throat Surgeon, Honorary Radiologist, Honorary Assistant Radiologist—one new appointment, Honorary Anæsthetists (2), Honorary Clinical Assistants to Out-Patients (10) — ten new appointments, Honorary Dentist. Honorary Medical Officers and Honorary Dentist will be appointed for 5 years, Honorary Assistant Medical Officers for 3 years and Honorary Clinical Assistants to the Out-Patient Department for 1 year. Copies of official application forms, *which must be used*, are obtainable at the office of the Secretary of the hospital. One such form, accompanied by copy of birth certificate and copies of testimonials in the case of applicants for vacant positions, must be returned to the Secretary of the hospital on or before 11th May, 1946. Envelopes containing applications must be endorsed: "Applications for the position of . . ."—R. J. BARRETT, Secretary.

FOR SALE, Examination Couch for doctor's surgery, unusual type; also portable sterilizer drum. 'Phone: XA 2234 (night), B06 ext. 2691 (day), Sydney.

ST. VINCENT'S HOSPITAL, MELBOURNE, N.6.—Applications are invited from legally qualified medical practitioners for the undermentioned vacant honorary positions. Holders of new appointments made during the period of the war are advised that such appointments have been terminated. One Physician to In-Patients. Two Physicians to Out-Patients. One Surgeon to Out-Patients. Two Gynæcologists to In-Patients. Two Gynæcologists to Out-Patients. One Ophthalmic Surgeon. One Therapeutic Radiologist. One Diagnostic Radiologist. Two Dermatologists. All the above appointments will commence on 1st May, 1946, and will cease on 31st December, 1949. One Assistant Surgeon to the Orthopædic Clinic. One Assistant Surgeon to the Urological Clinic. One Assistant Surgeon to the Neurosurgical Clinic. Two Assistant Ophthalmic Surgeons. One Assistant Surgeon to the E.N.T. Clinic. Assistant Anæsthetists. All the above appointments will be for a term of three years, commencing 1st May, 1946. One Acting Physician in charge of Diabetic Clinic. One Acting Physician in charge of Neurological Clinic. The above appointments are temporary only and are terminable on one month's notice. Two Clinical Assistants to the Orthopædic Clinic. One Clinical Assistant to the Urological Clinic. One Clinical Assistant to the Neurosurgical Clinic. Two Clinical Assistants to the Dermatologist. Two Clinical Assistants to the Ophthalmic Surgeons. Three Clinical Assistants to the E.N.T. Surgeons. Twelve Clinical Assistants to the O.P. Physicians. Ten Clinical Assistants to the O.P. Surgeons. Four Clinical Assistants to the Diagnostic Radiologist. Two Clinical Assistants to the Therapeutic Radiologist. One Clinical Assistant to the Psychiatric Clinic. Two Clinical Assistants to the Gynæcological Clinic. The above appointments are for the term of one year commencing 1st May, 1946. Applications, accompanied by testimonials and evidence of qualifications, must be lodged not later than 4 p.m. on 3rd April, 1946, and be addressed to the Secretary, from whom application forms are available.—E. W. R. GRACE, Secretary.

A.A.M.C. (2MD) OFFICERS' MESS.—The annual meeting of A.A.M.C. (2MD) Officers' Mess will be held in the Stawell Hall, 145 Macquarie Street, Sydney, at 8 p.m. on Friday, 22nd March, 1946. The affairs of the mess have been in abeyance for the last three years, but it is considered that the time is now opportune for a revival of activity. Membership is open to all commissioned members of A.A.M.C. on active, reserve or retired lists serving or resident in New South Wales, and to commissioned officers of medical services of R.A.N. and R.A.A.F. In addition officers attached to A.A.M.C. units (as dentists, pharmacists, quartermasters, etc.) are also eligible. Business: consideration of amendments to constitution and by-laws, election of office bearers, future activities of the mess. Supper will be served at the conclusion of the meeting. A good attendance is desired.—S. G. NELSON, Lieutenant-Colonel, Honorary Secretary, A.A.M.C. Officers' Mess.

CAIRNS HOSPITALS BOARD. Applications are hereby called for Junior Resident Medical Officer for the Cairns Hospital. Salary £550 per annum with board, lodging and laundry. Applications, together with testimonials, close on Wednesday, 20th March.—E. BLACKMORE, Secretary.

VICTORIAN RAILWAYS: VACANCIES FOR CHIEF MEDICAL OFFICER AND MEDICAL OFFICER.—Applications are invited for the following: Chief Medical Officer—present salary £1,111 per annum. Medical Officer—present salary £861 to £911 per annum. The salaries shown are subject to cost of living adjustments. The Chief Medical Officer controls the medical section of the department and is assisted by two Medical Officers in the conduct of vision, hearing and physical examinations. Applicants for the position of Medical Officer require to have a good knowledge of aural and ophthalmic work. In addition to public holidays, Medical Officers are granted three weeks' annual leave, and whilst on annual leave are entitled to a station-to-station pass on all lines in Victoria for themselves, wives and dependent children other than sons over 18 years of age, as well as a pass for themselves and wives for a specified journey in another State. Periodical rail tickets, at half rate, are available between their home station and Melbourne. Private practice is not permitted. Preference will be extended to persons with the necessary qualifications in accordance with the provisions of the Re-establishment and Employment Act (No. 11 of 1945). Further details may be obtained by letter or on inquiry at Room 100, Railway Offices, Spencer Street, Melbourne. Applications, showing date and place of birth, war service (if any), full details of qualifications and experience, together with copies of testimonials, should be forwarded to reach the Secretary for Railways, Spencer Street, Melbourne, on or before 25th March, 1946.

MANLY DISTRICT HOSPITAL: HON. MEDICAL STAFF. Applications are invited to fill the following vacancies on the Honorary Medical Staff of the Manly District Hospital: (*a*) Two Honorary Consultant Physicians, One Honorary Consultant Surgeon. (*b*) One Honorary Physician, One Honorary Pædiatrician, Two Honorary Assistant Physician and Anæsthetist, Two Honorary Assistant Surgeon and Anæsthetist. Applications should be made in writing on the form provided and which is obtainable from the hospital; must state age, qualifications and experience, and be accompanied by copies of three credentials. It must be understood that any applicant for any particular position in group (*b*), if unsuccessful, will be regarded as an applicant for any other position in the same group, and will be required to accept if appointed thereto. Appointments are for a period of three years, when all members of the Honorary Medical Staff under the age of sixty years will be eligible for re-appointment for a similar period. Application forms may be obtained from, and when completed should be addressed to, the undersigned before April 10, 1946.—FRANK MEDDOWS, Secretary to the Board of Management.

VICTORIAN EYE AND EAR HOSPITAL.—Applications are invited for appointment to the Honorary Surgical and Medical Staff of the above hospital: Honorary Ophthalmic Surgeons, Honorary Aural Surgeons, Honorary Assistant Ophthalmic Surgeons, Honorary Assistant Aural Surgeons, Honorary Clinical Assistants (Ophthalmic), Honorary Clinical Assistants (Aural). Application forms may be had on application to the undersigned. All applications to be lodged by not later than 23rd March, 1946.—J. MILLAR, Manager and Secretary.

It's Wonderful to feel HUNGRY Again!

Wyeth's Bewon Elixir is an unusually delicious vitamin B_1 preparation to spur lackadaisical appetites, especially during convalescence.

Its stimulating sherry flavour easily wheedles needed supplementary vitamin B_1 into your patient and ensures a regular, adequate supply of this appetite-stimulating factor, without disturbing the dietary routine.

Bewon is readily compatible with most medicaments, which makes it a satisfactory vehicle for many of your prescriptions.

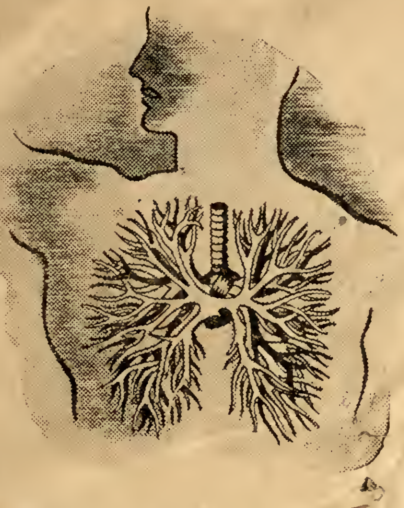
Wyeth's Bewon Elixir in a dosage of "One tablespoon three times daily before meals" stimulates food interest and ensures a daily intake of 3 mg. (1,000 I.U.) Thiamin Chloride.

BEWON ELIXIR

ELIXIR THIAMIN CHLORIDE

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

B7M



A NEW, ONE WORD PRESCRIPTION FOR COUGHS AND COLDS

Synephricol (Stearns) combines Codeine Phosphate and expectorants of time-proven effectiveness with Neo-Synephrine Hydrochloride as a non-toxic broncho-dilator.

Synephricol contains in each teaspoonful—

Codeine Phosphate	1/8 grain
Neo-Synephrine Hydrochloride	1/12 „
Potassium Guaiacolsulphonate	1 „
Ammonium Chloride	1 „
Menthol	1/65 „
Chloroform	1/4 minim
Alcohol	8%

SYNEPHRICOL
COUGH SYRUP
Stearns

Synephricol

CONTAINING NEO-SYNEPHRINE

FACTS ABOUT SYNEPHRICOL

SEDATIVE—Contains Codeine Phosphate (1 grain per ounce for its sedative effect).

EXPECTORANT—Ammonium Chloride and Potassium Guaiacolsulphonate provide safe, dependable expectorant action.

DECONGESTANT — Broncho-dilatation is produced by Neo-Synephrine Hydrochloride — non-toxic, orally active vaso-constrictor.

DOSAGE FORMS—Available in 4-oz., 16oz. and 80oz. bottles.

Frederick Stearns & Company
Division

SYDNEY, AUST. AUCKLAND, N.Z. NEW YORK KANSAS CITY SAN FRANCISCO WINDSOR, ONTARIO DETROIT, U.S.A.

BY APPOINTMENT

Horlicks for Nervous Tension and Emotional Stress

Today owing to nervous strain and physical exertion individuals will complain of being off-colour, run-down, tired and debilitated.

Tests show that Horlicks is easily digested and readily utilised. It raises the blood sugar and maintains it at a good level for a considerable period. Horlicks is not merely an energy-giver, it is a complete, well-balanced food which can be confidently recommended as part of the diet of the child, the adult, and the aged.

Doctors Favour . . . the B.M.I.

Comprehensive Automobile Policy

This policy, which is offered by the Medical Practitioners' own Company, provides complete cover, such as Unlimited Third Party Risk, Law Costs, Damage to Car, Theft of Car or Parts, or both. Compensation during repairs, and in addition Personal, Accident, and Medical and Surgical Expenses.

Before you renew your Car Insurance, arrange to secure further particulars.

The B.M.I. is under the aegis of the B.M.A. (Victorian Branch) and the Medical Society of Victoria.

ALL CLASSES of Insurance business transacted—Fire, Burglary, Workers' Compensation, Home, Furniture, etc.

DIRECTORATE:

Dr. C. H. Mollison (Chairman)
Dr. L. Latham
Dr. F. Kingsley Norris
Mr. T. E. V. Hurley
Dr. J. Newman Morris

THE BRITISH MEDICAL INSURANCE CO. OF VICTORIA LTD.

389-395 Little Flinders Street, Melbourne, C.1
Telephone: M 1871 (9 lines)

Medical Practices, etc.

Medical.

1. Unopposed country practice, excellent climate, south N.S.W. Average cash take £1,200. Good public hospital. Premium £1,000.
2. Unopposed subsidized practice, northern N.S.W. Cash take £1,100. Residence to rent. Price £600.

All Enquiries Confidential.

GOYDER, SON & CO.,

Medical Agents,

Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.

After Hours: JA 7202.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)

NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.

Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary.

MISS E. P. EVANS,

Manchester Unity Building, 185 Elizabeth Street, Sydney.

(MA 2031.)

QUEENSLAND INSTITUTE OF MEDICAL RESEARCH, BRISBANE.—Applications are invited for the position of Director of the above Institute. Subject to the general direction of the Council of the Institute, duties will be: (1) to direct research work and control and manage research staff of Institute; (2) to develop Institute on a comprehensive research basis; (3) to assist in planning permanent housing of Institute. Salary £2,000 per annum. Tenure is for seven years (subject to good conduct and efficient service) with eligibility for reappointment. Leave to visit other research centres and travelling expenses will be granted at discretion of Council. Appointee will be required to commence duty as early as possible in 1947. Applications close on 31st July, 1946, with the Secretary, Council of Queensland Institute of Medical Research, Box 917M, G.P.O., Brisbane, from whom intending applicants should obtain application forms and any further information required. The Institute has been recently established by the Queensland Government to undertake under the general control of a representative council research in any branches of medical science. It possesses at present only a skeleton staff and temporary accommodation. There is access to the hospitals of Brisbane (over 2,000 beds) and liaison with the University of Queensland.

WANTED TO PURCHASE, instrument cabinet, medium size, second hand. Particulars to Dr. A.B.C., this office.

Service for Doctors

Watson House, Bligh Street, Sydney.

Telephone: BW 4433.

No. 598.—Southern town, prosperous district, opposed practice, taking £3,750 — from surgery approximately one-third, mids. 130 p.a., few lodges, excellent hospital facilities. Goodwill £2,500. Modern brick bungalow, six rooms, surgery, waiting room, etc., for sale, £2,500. Terms available.

No. 578.—Within 100 miles of Sydney, opposed practice, industrial town. Takings average over £5,300 p.a.—90% from appointments. Mids. 130 p.a. Large public hospital. Goodwill £4,000. Property, large brick house, 10 rooms, £2,500. Terms available.

No. 574.—Two-man town, situated good pastoral area, taking over £2,000 p.a. Mids. 70, few lodges, modern 30-bed district hospital. Goodwill £1,400. Modern brick bungalow, three bedrooms, large verandahs, etc., E.L., H.W. service. To rent, £2 10s. weekly.

No. 559.—Opportunity for ex-service surgeon, preferably with senior degree, to join ex-service physician, M.R.A.C.P., in partnership, view purchase. Goodwill established, general practice situated excellent base hospital centre, prosperous district. Cash takings over £5,000—from surgery over £2,500, mids. 130 p.a., few lodges. Goodwill £3,000. Modern professional rooms and two residences available on rental basis.

Assistantships available in country towns within 100 miles of Sydney for single and married ex-service practitioners. Salary range £800 to £1,000 with accommodation and all expenses.

Particulars in Confidence.

WATSON VICTOR
LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

SYDNEY HOSPITAL: HON. CLINICAL ASSISTANTS IN PATHOLOGY. — Applications are invited from fully qualified medical officers for two appointments as Hon. Clinical Assistants in Pathology, whose duties would be mainly tutorial. Term of appointment—to 31st December, 1946. Applicants must complete a Sydney Hospital application form, and should attach copies of three credentials. Forms are available from the Medical Superintendent, who will also give particulars of duties. Canvassing of members of the board will disqualify. Applications, which close on 15th April, 1946, to be addressed, The President, Sydney Hospital, Sydney, and envelopes endorsed "Hon. Clinical Assistant".—A. F. BURRETT, Secretary.

SURGICAL INSTRUMENTS for sale, excellent pre-war quality and range from estate of deceased surgeon. Apply MRS. C. W. THOMPSON, 31 Silsee Street, Hamilton, N.S.W., or 'phone Hamilton 506.

CANTERBURY DISTRICT MEMORIAL HOSPITAL, CAMPSIE.—Applications will be received up to the 30th March, 1946, for the position of Honorary Assistant Orthopædic Surgeon to the above hospital.—W. J. BURKE, Secretary.

MAREEBA HOSPITALS BOARD. Applications are invited for the position of Resident Medical Officer. Salary £600 per annum, plus £2 2s. per week living allowance and reimbursement of all reasonable expenses incurred whilst visiting subsidiary hospitals. Furnished quarters are available at Mareeba Hospital for single applicant. Duties consist of visiting Board's subsidiary hospitals at Mount Molloy, Chillagoe, and Mount Mulligan periodically (such visits requiring about one week out of every four) and generally assisting the Medical Superintendent when at the main hospital, Mareeba. Previous hospital residency not essential. Duties to commence as soon as possible. Full fares to Mareeba refunded after 12 months' service. Applications to be addr[illegible]d to F. H. Jay, Secretary, P.O. Box 27, Mareeba, N.Q. Applicants are advised to send applications per air mail, owing to the possibility of disruption of trai[illegible] services through floods.

BRISBANE AND SOUTH COAST HOSPITALS BOARD. — Applications are invited from duly qualified medical practitioners for the following positions on the full-time medical staff of the Brisbane Hospital: (1) Surgical Supervisor. (2) Orthopædic Supervisor. Applicants must state name in full, date of birth, and furnish full particulars of academical records. Commencing salary at the rate of £950, rising by annual increments of £50 to £1,200. Further particulars may be obtained from the Manager, Brisbane and South Coast Hospitals Board, Box 1458T, G.P.O., Brisbane, to whom applications should be addressed on or before 14th April, 1946.

FOR SALE, Jones Ear, Nose and Throat Revolving Chair. Apply WA 1646, Melbourne.

QUEENSLAND

Medical Practices, Appointments, Assistantships, Locum Tenens, etc. Apply personally to

DAVID W. REID

Medical Agent,

MEDICAL AND SURGICAL REQUISITES PTY. LTD.

Wickham Terrace, Brisbane

Telegrams: "Measure", Brisbane.
'Phones: B 0294, B 0295, M 7450.

WESTERN AUSTRALIAN PRACTICES

NEILSON HANCOCK,

MEDICAL AGENT

Main line, agriculture. Income average £4,000. Price £3,000. House to rent £300, price £3,000.

Agriculture, unopposed. Income average £1,660. Price £1,000. House to rent at £1 5s. per week.

Good agriculture, unopposed. Income average £1,560. Price £900. Brick house to rent. Any reasonable offer considered.

City. Income average £4,300. Price £3,250. House available for sale.

Medical Practitioners anticipating release from War Service may secure details of Medical Practice Opportunities from

NEILSON HANCOCK,

205 St. George's Terrace, Perth

Telegraphic or Cable Address: "Westgraph, Perth."

W. RAMSAY (Surgical)PtyLtd

SURGICAL INSTRUMENTS AND HOSPITAL APPLIANCES

Latest Medical and Surgical Books Available

Sole Australasian Agents "BECKS"

W. RAMSAY (Surgical) Pty. Ltd.

340 Swanston St., Melbourne
18 Howard Street, Perth
11 Austin Street, Adelaide

THE ROYAL MELBOURNE HOSPITAL.—The Committee of Management of the Royal Melbourne Hospital invites applications from legally qualified medical practitioners for the positions of: Acting Surgeon to Out-Patients (1 vacancy), Surgeon to Out-Patients (1 vacancy). Forms of application and full particulars regarding the above vacancies may be obtained from the undersigned, with whom applications accompanied by copies of testimonials and evidence of qualifications must be lodged not later than 12 noon on Wednesday, 8th May, 1946.—R. E. FANNING, Manager.

WESTERN AUSTRALIAN PUBLIC SERVICE: ASSISTANT MEDICAL SUPERINTENDENT, WOOROLOO SANATORIUM.—Applications are invited for the abovementioned position under the State Public Service Act. Applicants should have good general hospital experience and preference will be given to one with special knowledge in the treatment of tuberculosis. Nominal salary range £780 to £940, actual £840 to £1,000 (including cost of living adjustment, at present £60 per annum). Quarters provided for which rental charged. Stores obtainable at contract rates. Applications should be addressed not later than 31st March, 1946, to the undersigned.—S. A. TAYLOR, Public Service Commissioner.

FOR SALE, microscope by Ernest Leitz, Weitzlar; objectives 3 and 7; eyepieces 6× and 10×; adjustable light "filter"; strong case. Also platinum wire loop and half a gross of glass slides. Apply K. A. COPPIN, Gladstone, Queensland.

ONE LEITZ MICROSCOPE with mechanical stage, 4 eyepieces, 3 objectives including 2 oil immersion lenses, 1 sphygmomanometer, 3 cystoscopes, 1 polarization apparatus. To sell.—179 Barkly Street, St. Kilda, Victoria, LA 3875.

LADY, single, 43, desires position as doctor's receptionist in dry climate, suitable for asthmatic. Previously teacher in tropics. Apply Miss M.J.R.F., 43 Kent Road, Surrey Hills, E.10, Victoria.

FOR PRIVATE SALE, X-Ray Practice in convenient country centre. For further particulars apply XYZ, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

YOU CAN OFFER MORE THAN

the unhappy choice between Psoriasis and Chrysarobin

The common skin discoloration and frequent dermatitis caused by chrysarobin may be as objectionable as psoriasis itself. Such disfigurements are unsightly—*and largely unnecessary!* Anthralin Ointment, used for the treatment of psoriasis and mycotic skin infections, is not only *more effective* than chrysarobin, but causes *much less skin discoloration* and involves *far less risk of dermatitis.* Used on the scalp or face in recommended concentrations, Anthralin carries less danger of conjunctivitis. Since Anthralin is less toxic than chrysarobin, it is also less likely to produce such constitutional reactions as nephrosis and gastrointestinal irritation.

● Anthralin is useful not only in psoriasis but also in the treatment of *ringworm* of the face, neck and arms; in *fungus lesions* on fingers, hands and feet; and in *dermatitis seborrhœica, pityriasis rosea,* and *alopecia areata.* Anthralin Ointment is available through pharmacies in 2-ounce collapsible tubes in four concentrations: 0.1 per cent., 0.25 per cent., 0.5 per cent., and 1.0 per cent.

Abbott Laboratories (Australia) Pty. Ltd., Box 3698, G.P.O., Sydney.

Anthralin

OINTMENT

(1, 8-Dihydroxy-Anthranol, Abbott)

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by Arthur Frederick Roots Simpson, of Fairholm Street, Strathfield, New South Wales, on behalf of the Australasian Medical Publishing Company Limited, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

mks

THE MEDICAL JOURNAL OF AUSTRALIA

Vol. I.—33rd Year. SYDNEY, SATURDAY, MARCH 23, 1946. No. 12.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

COMMONWEALTH

PENICILLIN "COMMONWEALTH" (THE CALCIUM SALT OF PENICILLIN) IS AVAILABLE IN THE FOLLOWING SIZES AT THE PRICES SHOWN

1 ampoule containing 100,000 Oxford units **10/6**
This quantity is sufficient for a series of parenteral doses.
(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units **5/6**
This quantity is intended for a single parenteral dose.
(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units **4/6**
This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired.
(Available also in boxes holding 6 ampoules.)

The Medical Profession is notified that the Control of Penicillin Order, promulgated in the *Commonwealth of Australia Gazette*, No. 85, of 3rd May, 1944, has been revoked.

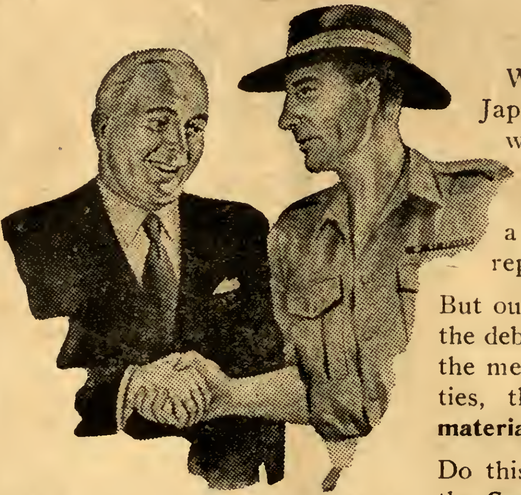
The Penicillin Order published in *Gazette* No. 189 of 20th September, 1944, and in The Medical Journal of Australia of 30th September, 1944, relaxes the conditions under which Penicillin may be supplied for the treatment of members of the civilian population.

To obtain Penicillin a Medical Practitioner must apply in the form of certificate set out in the order to the Senior Commonwealth Medical Officer in the State concerned. The signature of a colleague is no longer required.

The addresses of the Senior Commonwealth Medical Officers are: **NEW SOUTH WALES,** Customs House, Circular Quay, Sydney; **VICTORIA,** A.C.A. Building, 118 Queen Street, Melbourne; **SOUTH AUSTRALIA,** C.M.L. Building, 41-47 King William Street, Adelaide; **WESTERN AUSTRALIA,** 4th Floor, G.P.O., Perth; **TASMANIA,** Commonwealth Health Laboratory, Launceston; **QUEENSLAND,** Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES
PARKVILLE, N.2, VICTORIA, AUSTRALIA

A debt of honour—now due for payment



When the going was tough, when the Japs were less than 40 miles from Moresby, when only the courage of our servicemen stood between us and disaster—then, and throughout the war, we incurred a debt which money alone can never repay.

But our money can discharge at least part of the debt—it can provide the fresh start in life, the medical care, the training and opportunities, the pensions earned by valour—the **material** benefits we owe and will gladly pay.

Do this by investing to the fullest extent in the **Security Loan** . . . for rehabilitation.

And remember—your investment is for their security—and **yours.** You build up a fund of money for use later on. Your savings earn better than bank rates of interest. Payment of interest, and repayment of the loan on maturity, are backed by the whole assets of Australia. In emergency, your Bonds will provide ready cash.

Help repay the debt we owe to those who fought for us—buy Security Bonds with your savings, and buy more by instalments out of income.

FACTS ABOUT THE £70,000,000 SECURITY LOAN

1. *All you lend will be used to meet commitments arising out of the war, particularly the rehabilitation of Australian service men and women.*

2. *Bonds for £10, £50, £100, £500 and £1,000, or Inscribed Stock, may be purchased for cash or by instalments through any Bank, Savings Bank. Money Order Post Office or Stockbroker. Interest is payable each six months, at 3¼% per annum for 12 years or 2% per annum for 3 years. The 2% short term interest rate should appeal to companies and individuals with money temporarily available for investment.*

3. *Repayment in full at maturity is guaranteed by the Commonwealth. Bonds and Inscribed Stock are readily saleable to meet an emergency.*

4. *On your application form credit your subscription to your district to help its quota.*

"SECURE THEIR FUTURE AND YOURS"

INVEST NOW IN THE

Security Loan

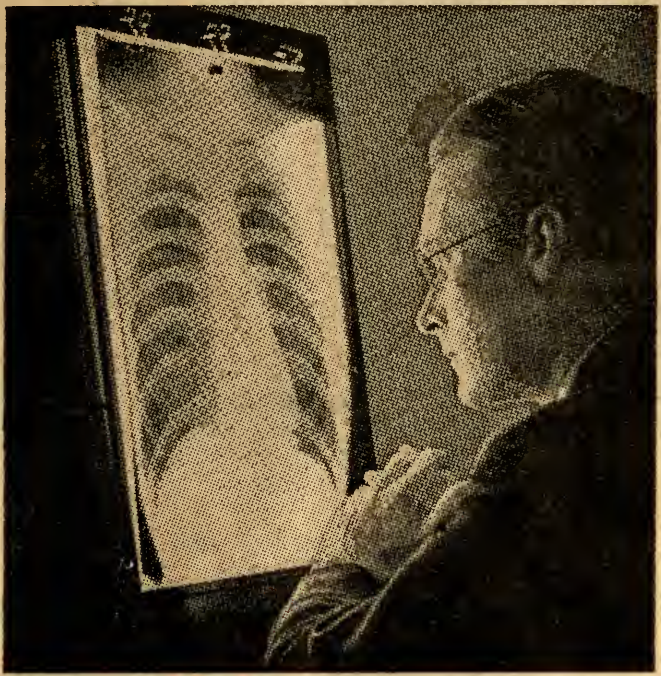
SL4.83.26

Achieving Perfection
in **RADIOGRAPHY**
with—

ILFORD
X-RAY FILM

Is the result of exacting scientific research conducted to produce a film combining chemical and mechanical qualities essential to radiographs of the highest possible diagnostic value. ILFORD X-RAY FILM gives delicate gradation and brilliant contrast with uniform quality.

ILFORD LTD., LONDON
Distributors:



WATSON VICTOR
LIMITED
9-13 Bligh Street, Sydney and at MELBOURNE, BRISBANE, ADELAIDE, PERTH, NEWCASTLE. WELLINGTON, NEW ZEALAND.

Make Your Will !

The making of a Will and the appointment of a reliable Executor are matters demanding the most careful attention of every man and woman possessing property and assets. In the appointment of an Executor or Trustee consider the many advantages offered by

PERMANENT TRUSTEE COMPANY
OF N.S.W. LTD.
Incorporated 1888 to act as
TRUSTEES, EXECUTORS, ATTORNEYS, AGENTS, ETC.

This old-established Company has had over 50 years' experience in the management of all classes of Estates. Unlike an individual, it cannot die, and, moreover, it offers Capital and Assets of over £1,000,000 as security for the protection of clients' interests.

Write for explanatory booklet, sent post free on request.

BOARD OF DIRECTORS:
A. E. Bond—Chairman
Sir Thomas Buckland
Cecil H. Doyle
F. W. Hixson
John Ewing
F. H. Way

E. V. T. Whittle, Manager.
N. L. Shaw, Assistant Manager.

23-25 O'CONNELL STREET, SYDNEY

A Statement of Fact —

Extract from "The Medical Journal of Australia": "Samples of Tenax Soap have been submitted to a careful investigation by our Analyst. He carried out a series of investigations with a 24-hour broth culture of Bacillus typhosus . . .

"Our Analyst expressed the opinion that it is probable that Tenax kills the bacilli in less than 30 seconds in a 10% Emulsion.

"We may thus conclude that Tenax is a satisfactory Germicidal Soap which may be recommended with confidence."

TENAX SOAP

A PRODUCT OF AUSTRALIAN SOAPS LTD.

Tranquillity
with
TROPINAL TABLETS

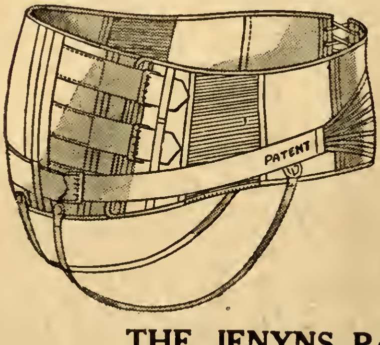
LITERATURE ON REQUEST TO
HAMILTON
LABORATORIES LTD.
ADELAIDE, SOUTH AUSTRALIA

★ Each tablet contains Phenobarbital gr. 1/3; Caffein gr. 1/3; Atropine Sulphate gr. 1/300. For the treatment of Neurosis, Hyper-irritability, Migraine, Vomiting of Pregnancy, Climacteric Disturbances, Epilepsy, Sea and Air Sickness.

THE
Jenyns REG.
PATENT CORSETRY

Affords Efficient Support and Assistance for Cases of

MATERNITY, POST-OPERATIVE, HERNIA, SACRO-ILIAC, VISCEROPTOSIS, ETC.



The most advanced scientific support and control are embodied in JENYNS garments.

If requiring Surgical Belts, Corsets, Girdles, Corselettes, Brassieres, Spinal Supports, Trusses of all kinds or Elastic Supports, insist on a "JENYNS". Made-to-order garments a specialty.

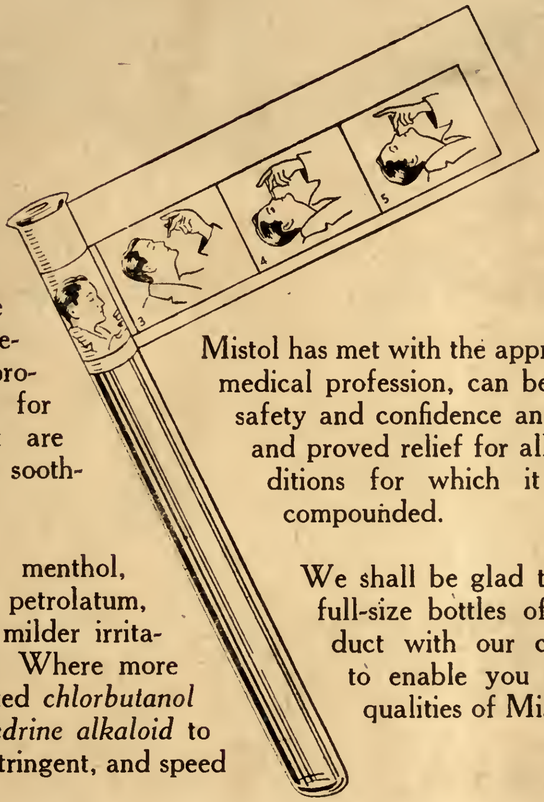
Procurable from all Leading Stores. Enquiries are solicited.

THE JENYNS PATENT CORSET PTY.
309-315 GEORGE STREET, BRISBANE. MADE IN AUSTRALIA.

RELIEVES . . . Colds, Laryngitis and Bronchitis

Mistol
Drops
with EPHEDRINE

- **MISTOL with Ephedrine for severe cases.**



If you have not yet prescribed Mistol, give these soothing anti-congestive preparations a trial. Mistol products are not only ideal for intranasal medication but are pleasant to administer, and soothing in reaction.

Mistol contains camphor, menthol, and eucalyptol in liquid petrolatum, with chlorbutanol for the milder irritations of nose and throat. Where more severe congestion is indicated *chlorbutanol* has been replaced by *ephedrine alkaloid* to provide a more powerful astringent, and speed recovery.

Mistol has met with the approval of the medical profession, can be used with safety and confidence and is a tried and proved relief for all those conditions for which it has been compounded.

We shall be glad to send you full-size bottles of each product with our compliments to enable you to test the qualities of Mistol.

Mistol

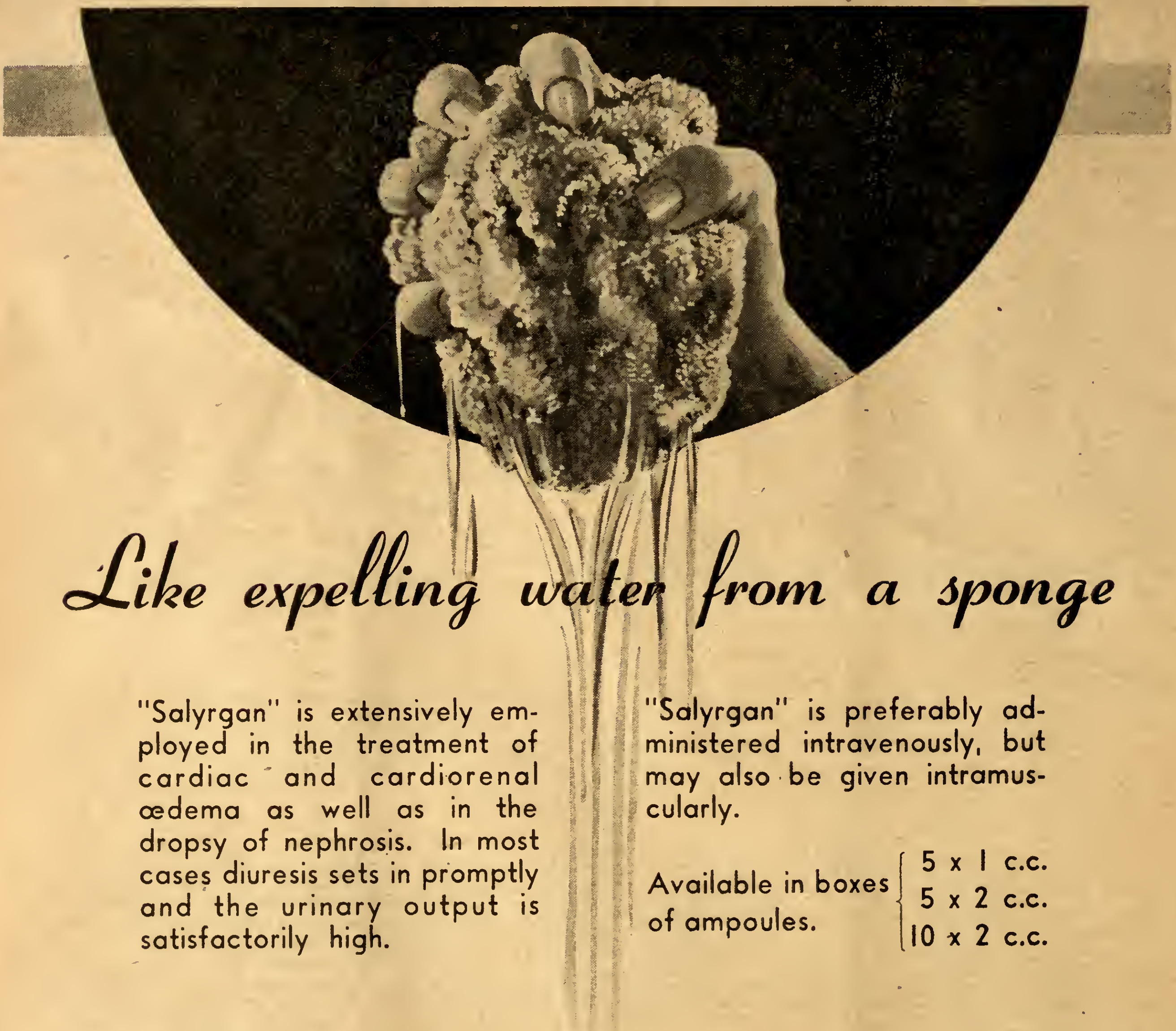
REGISTERED TRADE MARK

Mistol
DIRECTIONS

- **MISTOL for milder conditions.**

STANCO (AUST.) PTY. LTD.
15 Grosvenor Street, Sydney

MANUFACTURERS OF MISTOL AND MISTOL WITH EPHEDRINE



Like expelling water from a sponge

"Salyrgan" is extensively employed in the treatment of cardiac and cardiorenal œdema as well as in the dropsy of nephrosis. In most cases diuresis sets in promptly and the urinary output is satisfactorily high.

"Salyrgan" is preferably administered intravenously, but may also be given intramuscularly.

Available in boxes of ampoules.
- 5 x 1 c.c.
- 5 x 2 c.c.
- 10 x 2 c.c.

"SALYRGAN"

TRADE MARK

BRAND OF MERSALYL WITH THEOPHYLLINE

BAYER PHARMA PTY. LTD.

56 Young Street, Sydney

BAYER

DISTRIBUTORS: FASSETT & JOHNSON LTD., CHALMERS STREET, SYDNEY

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, MARCH 23, 1946. No. 12.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

Hookworm Disease in Australian Soldiers, with Reports of Cases, by C. B. Sangster 385
Some Observations Concerning the Use of Hypnosis as a Substitute for Anæsthesia, by R. L. H. Sampimon, M.D., and M. F. A. Woodruff, M.D., M.S. 393
The Anti-O Agglutinin in Human Blood, with the Report of a Case of its Occurrence, by Noel R. Henry, B.Sc. 395
Chondritis of the Patella, by Norman Little and Carlyle Hudson 398
Treatment of Suppurative Tenosynovitis in the Fingers, by L. Ian Burt 399

REPORTS OF CASES—

"DDT" Poisoning in Man, by I. M. Mackerras and R. F. K. West 400
A Short Note on the Changing Outlook in Osteomyelitis brought about by the Introduction of Penicillin, by R. D. McKellar Hall, M.B., B.S., F.R.C.S., F.R.A.C.S. 401
Post-Abortional Tetanus with Recovery, by Jean Hutchings and Alice Wheildon 404
A Case of Gunshot Wound of the Large and Small Intestines, by D. R. Leslie 406

REVIEWS—

A Textbook of Medicine 408
Pain in Childbirth 408
Chiropody 408
The Hair and the Scalp 408

LEADING ARTICLES—

Clinical Discipline 409

CURRENT COMMENT—

The Availability of Vitamins in Various Foods and Pharmaceutical Products 410
Penicillin and the Skin 411
A Twenty-Fifth Anniversary 411

ABSTRACTS FROM MEDICAL LITERATURE— Page.

Dermatology 412
Urology 413

BRITISH MEDICAL ASSOCIATION NEWS—

Notice 414

MEDICAL SOCIETIES—

The Public Medical Officers' Association of New South Wales 414

OBITUARY—

Herbert Michael Moran 415

CORRESPONDENCE—

Politics and the Medical Profession 416
Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease 417
Australia and Science: The University of Sydney and Scientists 417
Ulcers in the Mouth: An Appeal for Help 418
The Federal Medical War Relief Fund 418
Treatment of Gunshot Wounds of the Chest in the Field by Penicillin Therapy 418
Tsutsugamushi Disease: A Warning 419

NAVAL, MILITARY AND AIR FORCE—

Decorations 419
Casualties 419
THE FEDERAL MEDICAL WAR RELIEF FUND .. 419
NOMINATIONS AND ELECTIONS 420
MEDICAL APPOINTMENTS 420
BOOKS RECEIVED 420
DIARY FOR THE MONTH 420
MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 420
EDITORIAL NOTICES 420

HOOKWORM DISEASE IN AUSTRALIAN SOLDIERS, WITH REPORTS OF CASES.

By C. B. SANGSTER,
Lieutenant-Colonel, Australian Army Medical Corps.

(From an Australian General Hospital.)

THE incidence of hookworm infestation amongst Australian army personnel has increased steadily since the early days of the New Guinea campaign in 1942. This has been shown by surveys carried out on troops after their return to Australia from this theatre of operations.

In a recent survey of an infantry battalion on Bougainville, it was found that hookworm ova were recovered from the fæces, on one examination only, of 28% of personnel of the unit. The majority of these men were free of symptoms, but some were experiencing lassitude, vague abdominal discomfort and other minor complaints. This one small survey may well be representative of many other units, which have been campaigning intermittently during the last three years in New Guinea and its adjacent islands. Ankylostomiasis, unless it is borne in mind, is likely to provide diagnostic pitfalls for practitioners dealing with members of the Australian forces after this war. In this respect, it may be bracketed with malaria and amœbiasis, two other diseases which have occurred amongst service personnel, the former in greater and the latter in lesser numbers, and which may produce symptoms in these men in future years.

The object of this report is to place on record certain experiences of hookworm disease as encountered in an Australian general hospital, firstly in New Guinea, and later on Bougainville.

EXPERIENCES IN NEW GUINEA.

In a period of nine months at Port Moresby during 1943-1944, hookworm disease amongst Australian troops was found to be a relatively mild condition, with very few exceptions. In a large number of cases, the infection was to all intents and purposes a chance finding. For example, an excess of eosinophile cells was noted in the routine examination of a thick blood film taken for malaria, or eosinophilia was encountered in a white blood cell count made for some purpose other than as a lead to the diagnosis of ankylostomiasis. Both of these findings were regarded as an indication for a search for hookworm ova, and in quite a proportion of such cases these were found. Again, in the routine investigation of fæces from patients suspected of suffering from bacillary or amœbic dysentery, hookworm ova were sometimes found when the possibility of ankylostomiasis had not previously been considered. The majority of these patients were free from symptoms suggestive of this infestation.

However, in another group the diagnosis was hinted at by the clinical findings. Common symptoms were lassitude, epigastric and other vague abdominal discomfort, and the effects of moderate anæmia, such as dyspnœa on exertion or œdema of the ankles. A history of "ground itch" was uncommon. Any patient with anæmia, unless it was due to some other obvious cause, was suspected of having hookworm disease. Not only were some of these men pale, but this pallor was associated with a peculiar earthy colour, to which was added a faint patchy pigmentation. The whole effect was to produce a facies which came to be regarded as arousing suspicion of ankylostomiasis, and in such cases routine examination of the fæces for ova was carried out.

The anæmia was of the normochromic and normocytic type, and not the hypochromic and often microcytic type usually described. In the cases encountered in New Guinea, only rarely was the hæmoglobin value found to be below 11 grammes per 100 millilitres.

The routine treatment employed was the administration of either tetrachlorethylene (four millilitres) or carbon tetrachloride (three millilitres), both used in association with one millilitre of oil of chenopodium. A follow-up investigation of the stools on the eighth day was made and if ova were still present, the "drench" was repeated. Only a small minority of patients failed to become free of ova after two courses of treatment. To those patients found to be anæmic, ferrous sulphate (three grains, three times a day) was given, and unless some other complicating condition was present, the anæmia was corrected rapidly. The general condition of the patient was improved by the good and varied ward diet, and when it was thought necessary, vitamin B_1 and ascorbic acid were given in tablet form, in the dosage of nine and 75 milligrammes per day respectively.

The foregoing is a brief description of hookworm disease as encountered amongst troops in New Guinea. It came to be regarded, in the great majority of cases, as a relatively minor malady. Not one patient was severely ill, there were no complications, and treatment was found to be perfectly satisfactory.

EXPERIENCES ON BOUGAINVILLE.

This part of the report is based on experiences with this disease gained in the medical wards of the hospital between January and June (inclusive), 1945. The greater number of cases conformed to the type met with in New Guinea. However, three patients developed an acute and severe form of the disease, and others gave a classical history of the early invasive symptoms of this infestation in their chronological order. The main purpose of this paper is to record the findings in these three cases, for, as far as can be ascertained, no report of similarly acutely ill patients suffering from this disease amongst Australian troops in this war has so far appeared.

Ankylostomiasis is prevalent amongst the natives on Bougainville, and all Japanese prisoners of war taken in this theatre of war have been found to be suffering from this disease. It is certain that both the natives and Japanese have polluted the ground with fæces containing hookworm ova, but which have been the more responsible is difficult to decide.

Operations on certain parts of Bougainville necessitated passage of troops through considerable areas of swampy jungle, and sometimes they were up to their chests wading through muddy water. Several gardens, which contained evidence of recent Japanese occupation associated with unhygienic conditions regarding fæces disposal, were overrun. It was from some of the troops who had passed through these areas that a typical history of infection was obtained.

"Ground itch", often amounting to intense pruritus, was the initial symptom. This usually occurred on the lower parts of the legs or the buttocks, the latter site especially in the case of those who had sat on the ground in one of the gardens. From the notes previously recorded about the patients before their arrival at hospital, and from the descriptions of the patients themselves, a vesicular erythematous eruption was the usual associated skin lesion in the early stages. A number of these men stated that the severe itching appeared within as short a period as one or two minutes after their sitting on the ground; others said that the irritation on the legs or buttocks first occurred a few days later.

Five to seven days afterwards an irritating cough often developed, and this was sometimes associated with the complaint of a sore throat and substernal rawness, and the appearance of sputum which in two or three cases was blood-stained. In several instances these men were regarded as suffering from an upper respiratory tract infection, which was closely simulated, even to the congestion of the pharynx. The cough often lasted for a month or more, and in a number of cases gave rise to the erroneous diagnosis of "bronchitis". Admittedly, this condition was often engrafted, and scattered rhonchi could be heard throughout the lungs.

Several weeks after the onset of the itch, and in a few cases within as short a period as two or three weeks, symptoms referable to the abdomen usually developed. The commonest of these was epigastric or paraumbilical discomfort or even pain. It may be mentioned here that abdominal pain can be of great intensity, usually being situated in the epigastrium; but it may become generalized over the abdomen. This type is uncommon, but has recently been described in Australian troops in the Aitape-Wewak sector in New Guinea. The severe pain is often in the nature of cramp, and may be associated with vomiting. The importance of the recognition of this pain as occasionally occurring in ankylostomiasis is that otherwise, owing to its resemblance to that produced by a surgical emergency, an unnecessary laparotomy may be performed. Some patients suffered from nausea, and the majority complained of anorexia. An admission diagnosis of "dyspepsia, for investigation" was not uncommon. An interesting feature was the occurrence of intermittent diarrhœa with watery motions. A number of patients were regarded as suffering from dysentery, and it was not uncommon to find that the patient had been given several short courses of sulphaguanidine, to which his diarrhœa had proved unresponsive.

Such, then, was the typical history obtained from some 25 patients, who were later proved to be suffering from ankylostomiasis. They furnished a textbook description of the early invasive symptoms and clearly demonstrated the path taken by the filariform larvæ in the body in this disease: (i) boring through the skin to enter blood vessels and lymphatics; (ii) being transferred to the lungs, giving rise to an irritation in these organs; (iii) entering into the air passages of the lungs, migrating up the bronchi and trachea into the œsophagus; (iv) descending into the stomach, thence to the duodenum and jejunum, to the mucous membrane, of which they become attached by their powerful buccal armature, giving rise to epigastric and other abdominal discomfort, and finally, by their withdrawal of blood, to the anæmia which is so characteristic of this disease if untreated.

Diagnosis of the Disease in Hospital.

Fæces Examination.

The fæces from any patient presenting such a typical history as has been related were immediately examined for hookworm ova, and this examination was repeated several times if the initial investigation gave negative results. In a number of cases studied during the early invasive stages of the disease—that is, three to five weeks after the first symptom of itch—fæces examinations for hookworm ova gave negative results. At a later date these ova were found, or the diagnosis was made after the administration of vermifuges and the recovery of young adult hookworms. From some of the patients on Bougainville *Ankylostoma duodenale* was recovered, and from others, *Necator americanus.*

In view of the above experience it is interesting to quote the following reference from "Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases":(1)

> If infected soil comes into contact with the skin, stimulated probably by the warmth, the larvæ become very active and burrow through the skin . . . and reach the intestine about one week after infection, having undergone a third moulting. The larvæ grow rapidly, undergo a fourth moulting after another week (when they measure about 2 mm. by 0·13 mm.), and reach maturity about a month after entering the body. Sai Ryo (1937), who placed 300 Ancylostoma larvæ on the skin of three volunteers, found eggs in their fæces on the 54th, 55th and 57th days. He thought that in such instances between 290 and 295 of the larvæ penetrated the skin. By treatment, he recovered adult worms numbering 77, 78, and 83 respectively from their fæces.

Eosinophilia.

That eosinophilia is a common accompaniment and helpful lead to the diagnosis of hookworm disease is well known. Two methods have been used in this hospital. The first is the examination of a thick blood film for an excess of eosinophile cells. In many cases this simple procedure proved quite satisfactory. In the cases under discussion, a 30% to 40% eosinophilia was commonly found. The second method is a white blood cell count. The absolute count of eosinophile cells is much more informative and reliable than the percentage figure in a differential count, and no eosinophile count of less than 400 per cubic millimetre was taken as being of significance. A count above this figure was regarded as warranting a search for hookworm ova, the other causes of eosinophilia being borne in mind, such as certain skin diseases, allergic conditions, other intestinal helminth infections, the so-called tropical eosinophilia of Wiengarten, and Löffler's syndrome. The highest absolute eosinophile count found was 51,000 per cubic millimetre, representing 85% of 60,000 white blood cells per cubic millimetre. This was encountered in a patient (Private N.) who was in the convalescent stage of his illness, after having recovered from an acute form of the disease accompanied by severe anæmia. Several of the patients studied were notable for extremely high eosinophile counts, which are referred to in the descriptions of the cases appearing later.

The sputum of a few patients was examined during the early invasive period, and when lung symptoms were present. In a number of instances a percentage increase of eosinophile cells was present, and in one acute case these amounted to 80% of the white blood cells present. No larvæ were found in any of the specimens of sputum examined.

One patient arrived at hospital within a week of the appearance of the initial skin lesions. Fluid obtained from the vesicles contained 50% of eosinophile cells.

Patients with a Typical History during their Invasive Period.

The following cases are briefly described to illustrate the points enunciated in the foregoing description of the disease.

A trooper, aged thirty-seven years, from a cavalry commando squadron, had been subject to mild attacks of "bronchitis" for three months. Six weeks prior to his admission to hospital he sat in an old Japanese garden. Several days later an irritating rash developed on his buttocks, and four days later he noticed that his cough had increased, and that he had a mildly sore throat. Examination disclosed the patient to be a healthy-looking young man, and a few scattered rhonchi in the lungs were the only physical signs of disease. An X-ray examination of his lungs disclosed no significant abnormality. The hæmoglobin value was 15·5 grammes per 100 millilitres and the white blood cells numbered 14,500 per cubic millimetre, 54% being eosinophile cells. Examination of his fæces disclosed hookworm ova. Vermifuges were given, and adult forms of *Ankylostoma duodenale* were recovered. Hookworm ova were still present three days later. He made an uninterrupted recovery.

A trooper, aged twenty-two years, from the same cavalry commando squadron, two months prior to his admission to hospital had sat in a Japanese garden. He stated that within one minute of his so doing an intense irritation was felt on his buttocks, which later developed into a "red rash with small blisters on it". Two days later he had a cough and sore throat, the former lasting about one month. Six weeks prior to his admission to hospital intermittent diarrhœa occurred, up to six stools being passed daily; the diarrhœa was not associated with the passage of mucus or blood. He had experienced epigastric pain, and had occasionally vomited. His diarrhœa proved unresponsive to three separate courses of sulphaguanidine therapy. On his admission to hospital, the patient was noticed to be pale, and indefinite epigastric tenderness was present. Beyond these two findings, physical examination gave negative results. The hæmoglobin value of his blood was eight grammes per 100 millilitres, and the red blood cells numbered 3,500,000 per cubic millimetre. The white blood cells numbered 15,500 per cubic millimetre, 33% being eosinophile cells. The first examination of his fæces disclosed no hookworm ova, but these were found in the second specimen. Vermifuges were given, and were followed by the recovery of adult forms of *Necator americanus*. He had been given iron, and twelve days after the original blood count, the hæmoglobin value was 11·5 grammes per 100 millilitres. Soon afterwards he was discharged from hospital.

A trooper, aged twenty-two years, from the same cavalry commando squadron, seven weeks prior to his admission to hospital had sat in a Japanese garden. Within ten minutes an itch developed on his buttocks; this was followed within a few days by a rash. One week later a cough appeared, together with a sore throat. For the three weeks prior to his admission to hospital he had experienced epigastric discomfort and diarrhœa which was unresponsive to three separate courses of sulphaguanidine therapy.

Upon his arrival at hospital, examination disclosed no abnormal physical signs. Examination of a thick blood film revealed an eosinophilia of 40%, and the hæmoglobin value was 14 grammes per 100 millilitres. Hookworm ova were found in his fæces, and adult forms of *Ankylostoma duodenale* were recovered after vermifuges had been given. His response to treatment was satisfactory.

A private soldier, aged twenty-six years, from an infantry battalion, shortly after wading through swampy ground recently occupied by Japanese, noticed a severe itching around his ankles. Five days later he developed a cough, a feeling of substernal rawness, and a sore throat. In the forward area his temperature was found to be 101° F. and his pharynx congested. He was treated with sulphathiazole for an upper respiratory tract infection. On his admission to hospital, approximately four weeks after the onset of the itching, he was noticed to be pallid and his voice was husky, but apart from these findings there was no clinical evidence of disease. The white blood cells numbered 30,000 per cubic millimetre, 70% being eosinophile cells. No hookworm ova were recovered from the fæces in four separate examinations performed on successive days. He was then given vermifuges, and adult forms of *Ankylostoma duodenale* were recovered; they contained red blood cells and immature ova. Seven days later he was "drenched" again; at this stage the hæmoglobin value of his blood was 14 grammes per 100 millilitres, and the white blood cells numbered 25,900 per cubic millimetre, 50% being eosinophile cells. He made an uninterrupted recovery.

Acute Forms of Hookworm Disease.

At this hospital attention was focused on ankylostomiasis by the observation of three patients who developed anæmia of rapid onset and great severity; their records will be described in detail later.

After troops in New Guinea had been dealt with, the impression was gained that amongst them this disease was a relatively minor condition, often associated with mild anæmia, dyspeptic symptoms and eosinophilia, sometimes with a history of "ground itch", complications, if any, were few, the prognosis was good, and response to treatment was satisfactory. However, the three cases to be described later carried with them a salutary lesson as to the acute form that ankylostomiasis can take, especially with regard to the anæmia.

Admittedly the usual form of the disease is a chronic malady extending over months or years. Owing to the prolonged and often repeated infestation, anæmia of increasing severity ensues, debility or a dangerous cachexia follows, retardation of mental and physical development occurs in children, and by virtue of the general impairment in health, the subject is exposed to intercurrent and terminal infections. All authorities stress the point that a poorly balanced or inadequate diet is an important factor in the occurrence of advanced forms of the disease. This was certainly not so in the cases studied.

Controversy still exists about the possible factors involved in the production of the anæmia—namely, (*a*) chronic blood loss, (*b*) absorption of a specific hæmolytic toxin, (*c*) repeated bacterial infection through the lesions produced by the parasite in the intestine, and (*d*) unfavourable diet. However, there seems little doubt that in severe infestations it is the mechanical blood loss brought about by the worms that gives rise to the anæmia. It has been estimated by one investigator that a single worm is capable of withdrawing as much as 0·84 millilitre of blood per day. In the presence of a heavy infestation of a thousand worms or more, it is easy to understand how rapid and severe anæmia may be produced.

That frank melena is rarely met with in this disease, as in the three cases to be described, is evident from the writings of authorities. Thus Manson-Bahr(2) writes as follows:

> The stools sometimes, though rarely, have a reddish brown tinge from admixture of half-digested blood. Sometimes they may contain small flakes of blood-tinged mucus. Pure blood is seldom passed; and an extensive hæmorrhage, unless there be concurrent colitis, is rare, although, post mortem, considerable quantities may be found in the small intestint.

Manson-Bahr goes on to state that "acute cases develop terminal diarrhœa with passage of much mucus, and occasionally, blood. These cases are apt to be mistaken for various forms of Dysentery".

Again, Strong, in "Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases" simply states that, "constipation is rather a common feature, though diarrhœa may occur. The stools may very rarely show macroscopic blood. In a few instances, bloody mucus has been reported". A technical instruction on ankylostomiasis, issued by the Director-General of Medical Services, Australian Military Forces, states that "constipation is the rule, but occasionally intermittent diarrhœa occurs. Macroscopic blood in the stools is uncommon".

Description of Three Cases of Acute Hookworm Disease.

Private R., aged twenty nine years, from an infantry battalion, became ill on January 31, 1945, when an itchy rash developed over the right knee and the lower part of the right leg. A fortnight later cough and sputum appeared, and a week afterwards he was admitted to a field ambulance with pyrexia, aching pains in the muscles, and symptoms of an upper respiratory tract infection. Two days later he developed diarrhœa, which was not controlled by sulphaguanidine, and he was regarded as possibly suffering from amœbic dysentery. He was passing dark fluid stools in which no blood or mucus was present on macroscopic examination; microscopic examination disclosed many red blood cells, but no amœbæ, ova or cysts. On March 6, 1945, the hæmoglobin value of his blood was eight grammes per 100 millilitres. He was admitted to hospital the following day, still passing three to four fluid stools per day, and with a history of great lassitude for the ten previous days. On examination of the patient, his mucous membranes were pale and an apical systolic bruit was present, but otherwise there were no physical signs of disease. His initial blood findings on March 7, 1945, were as follows: the hæmoglobin value was five grammes per 100 millilitres and the red blood cells numbered 2,100,000 per cubic millilitre; the white blood cells numbered 19,000 per cubic millimetre, 31% being eosinophile cells (an absolute count of 5,890 per cubic millimetre).[1]

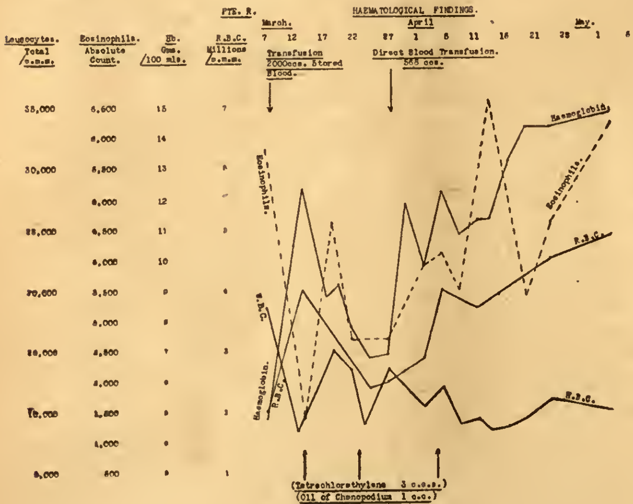


Figure I.

On March 8 a transfusion of two litres of stored blood was given. An X-ray picture taken on that day disclosed no abnormal findings in the lungs. No eosinophile cells, larvæ or fungi were found in sputum examined on this same date.

He continued to pass watery fæcal stools, in which much blood was visible on macroscopic examination; but no cysts, amœbæ or ova were found, and no pathogens were isolated on attempted culture.

Between March 9 and March 11 three further specimens of fæces were examined. On microscopic examination they were found to consist of almost pure hæmolysed blood, and again no ova, cysts, amœbæ or pathogens were discovered. The frank melena continued.

On March 13 he was given three millilitres of tetrachlorethylene and one millilitre of oil of chenopodium, and a mixture containing 30 grains of iron and ammonium citrate was administered three times a day. Three of the first four stools passed after the "drench" had been given were examined for hookworms. Unfortunately the third specimen, passed in the middle of the night, was discarded. From the three specimens, 2,500 adult forms of *Necator americanus* were recovered. Reference is again made here to the fact that previously, five specimens of fæces had been examined on separate days and no hookworm ova had been found. On March 15, on macroscopic examination, dark blood was obviously still present in the fæces, and four days later the fæces were still free of ova. On March 22 the "drench" was repeated, 360 adult forms of *Necator americanus* being recovered in the first three stools passed afterwards.

The patient had been given a diet rich in protein, with added vitamins B_1 and C. On March 27 the bleeding time was 60 seconds and the coagulation time 50 seconds, and the blood platelets numbered 290,000 per cubic millimetre. A sternal puncture was performed for evidence of any depression of the bone marrow, or inhibition of maturation of the erythroblastic series. The pathologist's report gave the following information: nucleated red cells numbered 150,000 per cubic millimetre; of the leucocytes, 0·3% were myeloblasts and 1·5% were premyelocytes; of the neutrophile leucocytes, 5·1% were myelocytes, 10·4% were juvenile forms, 12·9% were band forms and 13·5% were segmented; of the eosinophile leucocytes, 8·5% were myelocytes, 6·5% were juvenile and band forms and 10·0% were segmented; 3·5% of the leucocytes were lymphocytes and 0·2% monocytes; of the red cells, 0·8% were proerythroblasts, 1·5% were early erythroblasts, 11·8% were late erythroblasts and 13·8% were normoblasts. The bone marrow was hyperplastic, but the hyperplasia was confined mainly to the eosinophile series, in the cells of which many mitotic figures were present. The number of megakaryocytes was found to be within normal limits. There was no retardation or suppression of the red cell series.

On March 28 the patient was given 568 millilitres of blood by direct transfusion. On April 1 hookworm ova were found in the fæces for the first time—that is, sixty-one days after his intial symptom of "ground itch". Three days later the "drench" was repeated, 315 adult forms of *Necator americanus* being recovered from the first two stools passed afterwards. Thus when allowance is made for the worms that must certainly have been present in the discarded stool after the first "drench", it can be estimated that the heavy infestation in this patient was in the vicinity of 3,500 worms. No hookworm ova were found in his fæces at three separate examinations carried out between April 10 and April 13. A bilharzia complement fixation test was performed on serum flown to Australia; the result was negative.

The patient was allowed out of bed, and on May 11 he appeared quite well, had a normal, healthy colour, and was completely free of symptoms. During his illness, his temperature remained normal except for a mild pyrexia up to 99° F. from March 11 until March 17. On May 22 he was transferred to the convalescent depot.

The main features in this case are as follows: (*a*) the early invasive symptoms, (*b*) the occurrence of frank melena, (*c*) the rapid onset and severe degree of anæmia, (*d*) the magnitude of the infestation, with the recovery of approximately 3,500 adult worms (*Necator americanus*) after three courses of vermifuges had been given, (*e*) the satisfactory response to treatment.

Private N., aged nineteen years, from an infantry battalion, "reported sick" on February 13, 1945, when he noticed that he became dizzy and experienced a pounding sensation in his head after walking short distances. He had then been in the tropics only four months, and during this time he had lost two stone in weight. For the three weeks prior to his admission to hospital his appetite had been poor and he had noticed occasional mild, indefinite, abdominal pain. On February 20 he was admitted to a field ambulance, where he was noticed to be pale. Examination of blood films taken there revealed no malaria parasites and no hookworm ova were found in his fæces. He was admitted to hospital on March 2, with the diagnosis of "anæmia, for investigation". Further interrogation elicited a history of cough, which had developed on about January 26 and had lasted for a period of three weeks. There was no history of diarrhœa or "ground itch". He had been in areas known to be infested with hookworm.

---

[1] No further reference is made here, in the description of this case, to subsequent blood investigations. They are detailed in graph form in Figure I.

Examination in hospital disclosed that the patient was a thin, pale boy. Some enlarged, firm, but not tender glands were palpable in both groins, axillæ and posterior triangles of the neck, but no other abnormal physical signs were present. A blood examination was carried out on the day of his admission to hospital, with the following results: the hæmoglobin value was 4·5 grammes per 100 millilitres: the erythrocytes numbered 1,700,000 per cubic millimetre and the leucocytes numbered 15,000 per cubic millimetre; of the leucocytes, 25% were neutrophile cells, 59% were eosinophile cells, 1% were basophile cells, 10% were lymphocytes and 5% were monocytes.

The results of subsequent blood examinations are detailed, in graph form, in Figure II. Examination of several blood films disclosed no malarial parasites. A transfusion of two litres of stored blood was given on March 3, and on the following day numerous hookworm ova were found in the fæces; this finding was suggestive of a heavy infection.

As the result of the transfusion, the patient's condition was considerably improved. An X-ray film of his lungs taken on March 8 disclosed no abnormality, and a benzidine test on his fæces, which were dark in appearance, produced a strongly positive reaction.

On the following day he was given four millilitres of tetrachlorethylene. His general condition began to improve. On March 10 treatment with an iron and ammonium citrate, 30 grains in a mixture, three times a day, was instituted; this was discontinued after three days, owing to the apparent bowel irritation resulting therefrom. An examination of his fæces on March 17 revealed only occasional hookworm ova present. A further "drench" of three millilitres of tetrachlorethylene was given on the following day.

On March 22 no ova were found in the fæces. On March 23 a further transfusion of two litres of stored blood was given, as the general condition of the patient did not appear to be as good as a week previously, and his hæmoglobin value had commenced to fall again. Three days later he was given his third "drench" of four millilitres of tetrachlorethylene; after this adult forms of *Necator americanus* were recovered from his stools. A further X-ray film of his lungs taken on March 27 disclosed no abnormality.

From this time onwards he made rapid strides towards recovery, with full correction of his anæmia. By April 3 he was feeling and eating well, and moving about the ward without discomfort. On April 21 hookworm ova were still present in his fæces; but he was steadily gaining in weight, retaining his healthy appearance and complaining of no symptoms. He was given occupational therapy in the pathology department, and, appropriately enough, became apt at the identification of hookworm ova. His fæces still contained ova on May 19 and two days later he was given his fourth "drench" of four millilitres of tetrachlorethylene and one millilitre of oil of chenopodium. Only five adult worms (*Necator americanus*) were recovered from three specimens of fæces passed afterwards.

He remained perfectly well, with no anæmia; but his white blood cell count was found to be 60,000 per cubic millimetre, 85% of the cells being eosinophile. It was decided to retain him in hospital for further observation.

On June 9 his fæces were examined, but no hookworm ova were found. By this time his white blood cell count had dropped to 15,000 per cubic millimetre, 60% of the cells being eosinophile. On June 19 he was discharged to the convalescent depot, feeling well; his hæmoglobin value was 15 grammes per 100 millilitres, and his blood cell count was 15,000 per cubic millimetre, eosinophile cells constituting 54%. Except for mild febrile reactions after both transfusions, he was apyrexial during the length of his stay in hospital.

The main features in this case are as follows: (*a*) the rapid onset and severe degree of the anæmia; (*b*) the occurrence of melena; (*c*) the extreme degree of eosinophilia, the absolute count rising to 51,000 cells in the convalescent period; a striking drop in the eosinophile count occurred after the final "drench"—this is shown to advantage in Figure II; (*d*) the satisfactory outcome, full health being rapidly regained after blood transfusions and the administration of four courses of vermifuges.

Private S., aged twenty years, from an infantry battalion, was admitted on February 13, 1945, to one of the skin wards of the hospital complaining that he had had an itchy skin eruption on his legs and in his groins for the previous fortnight. In addition, for the preceding week he had had a cough with a little sputum, and a sore throat.

Examination disclosed a squamo-erythematous eruption in the groins and on the legs, and congestion of the fauces. Mycelium of *Microsporum minutissimum* was recovered from a skin scraping. Examination of a thick blood film revealed eosinophilia. No malarial parasites were seen in this film, or in several blood films examined subsequently.

On the day of his admission to hospital his temperature was 100·2° F.; six days later it had fallen to 99° F., but on February 22 it rose to 103° F. He was still complaining of a sore throat, and vague abdominal pains with vomiting had developed. His fauces and tonsils remained congested, but no exudate was present. An examination of his fæces on this date revealed no hookworm ova.

On February 23 signs developed suggestive of early pneumonia at the base of the right lung, and sulphamera-

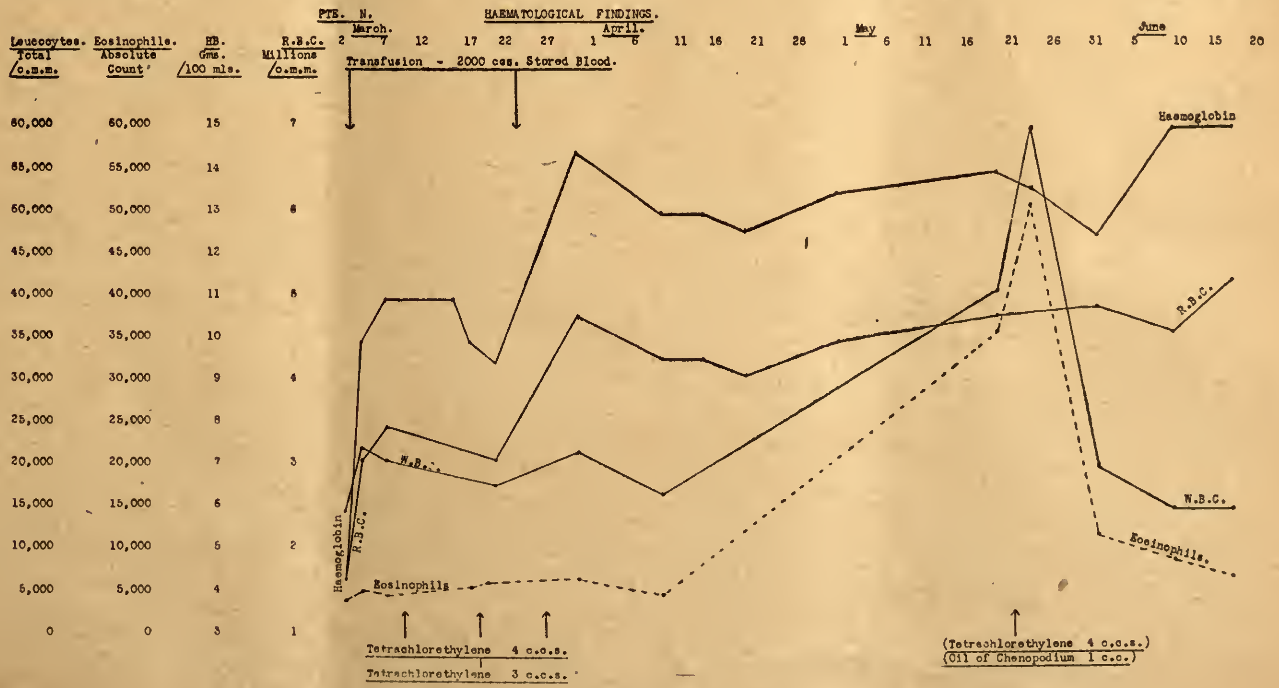


Figure II.

zine therapy was promptly instituted. Another examination of fæces on the following day disclosed no hookworm or other ova. The pyrexia continued.

On February 25, impaired percussion note, increased vocal fremitus and post-tussive crepitations were found posteriorly over a localized area in the middle zone of the right lung. On this day, a blood count gave the following results: the hæmoglobin value was 13·5 grammes per 100 millilitres and the leucocytes numbered 25,200 per cubic millimetre; of the neutrophile cells, 4% were juvenile, 5% were band forms and 51% were segmented; of the remaining leucocytes, 16% were eosinophile cells, 1% were basophile cells and 15% were lymphocytes.

The results of further blood examinations are detailed in graph form in Figure III.

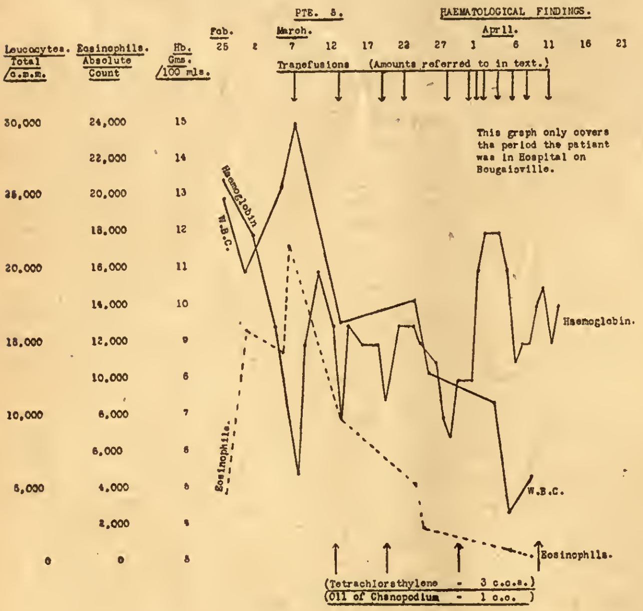


FIGURE III.

No ova were present in the third and fourth specimens of fæces examined.

On February 26 an X-ray film of his lungs revealed a diffuse opacity in the lower zone of the right lung, not involving the area immediately above the diaphragm, and pneumonic consolidation of the middle lobe. No acid-fast bacilli were present in three specimens of sputum examined. On March 1 sulphamerazine treatment was suspended, as the pyrexia and lung signs had not responded to this therapy. The following day another X-ray film of his lungs revealed that some resolution had taken place. Clinically, because of the localized nature of the physical signs, and because of the fact that he was coughing up purulent sputum, a lung abscess was suspected at this stage. His temperature continued to vary between 99° and 101° F. and he had the general appearance of illness. On March 3 another specimen of fæces was examined, but no hookworm or other ova were found. His hæmoglobin value was then 12 grammes per 100 millilitres of blood, and treatment with ferrous sulphate was instituted, three grains three times a day.

On March 5 examination of his sputum revealed profuse polymorphonuclear pus cells, 80% of which were eosinophile. The sputum contained numerous streptococci and Gram-positive cocci in pairs and clumps, but no scolices or acid-fast bacilli; monilia, *Streptococcus viridans* and *Staphylococcus aureus* grew on culture.

On March 7 his hæmoglobin value had dropped rapidly to 5·5 grammes per 100 millilitres of blood. A transfusion of two litres of stored blood was given on this day. On March 8, 1945, much macroscopic blood was present in the stools, two specimens of which were examined for ova, with negative results. The Casoni test produced negative results, and examination of several nocturnal blood films disclosed no microfilaria.

On the following day the third X-ray film of his lungs was taken, and this revealed an abscess cavity, with a fluid level in the upper part of the lower lobe of the right lung. Eosinophile cells were still present in large numbers in the sputum, and his temperature continued to swing up to 101° F. He was obviously seriously ill. On March 9 he continued to pass liquid fæcal stools, which contained no exudate or ova, and from which no pathogens were recovered on attempted culture. The occult blood test produced a strongly positive reaction.

On the following day hookworm ova were recovered from his fæces for the first time since his admission to hospital on February 13 and thirty-eight days after the occurrence of the initial itchy skin lesion. He had been started on continuous intramuscular penicillin treatment on March 8, but this was discontinued on March 11 after the administration of 300,000 units, as his temperature had proved unresponsive to this therapy.

On March 12 he was given three millilitres of tetrachlorethylene and one millilitre of oil of chenopodium. Hookworm ova, but no worms, were recovered from the fæces passed after the "drench". On March 13 he was given a second transfusion of 2,000 millilitres of stored blood. By this time the lung signs were beginning to diminish. He continued to pass three or four liquid stools per day, containing much macroscopic blood, and by this time abdominal colic had become his most distressing symptom. On March 19, owing to the falling hæmoglobin value of his blood, he was given another transfusion of two litres of stored blood, and the second "drench" with three millilitres of tetrachlorethylene and one millilitre of oil of chenopodium was administered. On March 22 he was given 23 ounces of blood by direct transfusion. The following day a further X-ray examination of his lungs was made; this revealed a considerable improvement in the right lung; the abscess cavity was no longer definable, although some slight residual opacity remained.

On March 26 the bleeding time was one and a half minutes and the clotting time 55 seconds, and the platelets numbered 200,000 per cubic millimetre. On March 27, 1945, his stools continued to contain much blood, considerable numbers of hookworm ova and no amœbic cysts. A sternal puncture was performed on March 27; the pathologist reported that in the sternal marrow the total number of nucleated cells was 120,000 per cubic millimetre. In the red cell series 0·5% were proerythroblasts, 7·0% were erythroblasts and 13·0% were normoblasts; the eosinophile series made up 30% of the total nucleated cells. The bone marrow was hyperplastic, mainly in the eosinophile series. There was no retardation or suppression of the red cell series.

On March 28 a further transfusion of 2,000 millilitres of stored blood was given, and on the following day he had his third "drench". Examination of his stools after this showed them to be packed with hookworm ova, and a few adult worms (*Necator americanus*) were also recovered.

The intestinal hæmorrhage continued, the hæmoglobin value continued to drop after each transfusion, and it was proving a task to keep him supplied with sufficient blood. On March 31, 21 ounces of blood were given by direct transfusion; a further 29 ounces were given on the following day, and 23 ounces again on the day afterwards. He was desperately ill, and the prognosis appeared bad. He had by this time lost a considerable amount of weight, he was having drenching sweats, although his temperature had fallen lower (99° and 100° F.), and he was continually complaining of colicky abdominal pains. His abdomen was diffusely tender. On April 4 he was again given a direct transfusion of 30 ounces of blood, and 32 ounces and 36 ounces of blood were given respectively on April 6 and April 8. On April 9 he was given a fourth "drench" of three millilitres of tetrachlorethylene and one millilitre of oil of chenopodium. Adult worms were present in the first two stools passed afterwards; but unfortunately they were not counted. However, from the third stool after the "drench", 500 adult worms (*Necator americanus*) were recovered.

From this time, he began to show a slight improvement and his abdominal pains lessened. On April 11 he was given 20 ounces of blood by direct transfusion. Until this date, and during the period since his admission to hospital on February 13, he had been given 494 ounces of blood.

On April 12 he was feeling much better, and his general condition had improved. His temperature was gradually falling, and varied between 97·6° and 100° F. A hospital ship called for patients on April 14, and, as he was then judged to be fit to travel, he was evacuated to the mainland on that date.

The progress of this soldier after leaving Bougainville is contained in the description which appears below.

He was admitted to a base hospital in Sydney on April 23, 1945. On this date, his general condition was so poor that once again he was placed on the "dangerously ill" list. A blood examination carried out on April 23 gave the following results: the red blood cells numbered 2,200,000 per cubic millimetre, the hæmoglobin value was 6·9 grammes per 100 millilitres and the white blood cells numbered 10,000 per cubic millimetre of which only 1% were eosinophile cells.

The following summary is of his progress until July 3, when he entered the convalescent stage.

Upon his arrival at the base hospital, the patient had a general "toxic" and emaciated appearance. He had minimal signs of bronchitis in his lungs, but these rapidly cleared, not to return. Two X-ray examinations produced no evidence that his lung abscess had left any effect. It was not until early in June that he looked better and his general condition began to improve. During the week prior to July 3 a pronounced general improvement took place. He was eating well, he began to put on weight, and his colour was much improved. It was expected that soon after that date he would be well enough to be returned to his home State, Tasmania, there to convalesce.

After he entered hospital, his temperature varied between 99° and 103° F. until May 17. He was almost afebrile each morning, and his pyrexia was highest late in the afternoon. From May 25 onwards, apart from an occasional rise of temperature to 99° F. he remained afebrile.

For the first month his pulse rate varied between 108 and 120 per minute, after which it remained steady at about 90 per minute.

It has been mentioned that no malarial parasites were found in films examined on Bougainville. In films taken at the base hospital no malarial parasites were found until May 21 when benign tertian parasites were discovered. The routine army course of quinine, "Atebrin" and "Plasmoquine" was given, and whether or not incompletely suppressed malaria was the cause of the intermittent pyrexia, the fact remains that, from the time when anti-malarial therapy was instituted, he remained for all intents and purposes afebrile.

The dark fluid stools, three to five *per diem*, which had been one of the characteristics of his illness on Bougainville, continued to be passed during the first fortnight after his admission to the base hospital. From that time they became less frequent, until during the ten days prior to July 3, only one or two soft, formed or semi-formed stools were being passed each day. Initially, and when the patient was not having iron therapy, the stools, as on Bougainville, were dark. The colour suggested a continuance of the intestinal hæmorrhage, and this was proved to be present, for all tests for occult blood performed on the fæces during the period of his stay in hospital gave positive results.

On June 18 it was noted that his stools appeared bulky and greasy, and examination disclosed an excess of split fat. However, on July 1, the stools, although still slightly greasy in appearance, looked much more normal.

The suggestion that this fatty type of stool was due to defective absorption from the small intestine appears to be correct. Several reports have appeared recently of cases of prolonged bacillary dysentery in which the stools had somewhat the same appearance, and were suggestive of defective digestion in or absorption from the bowel, or of both. In respect of these abnormal stools, it appears that both in the case reported, and in those of chronic bacillary dysentery referred to earlier, there may have been a common *modus operandi*. Intestinal "hurry" may afford an additional explanation to that offered in the cases of dysentery—namely, that sulphaguanidine may have been a factor in the production of a conditioned deficiency, by inhibiting the growth of commensal organisms in the bowel. In any case, the evidence in the fæces of poor absorption affords at least one reason for the great loss of weight that occurred in this patient.

It was noted that, until the middle of June, abdominal distension was a prominent feature, and the physical signs indicated that the small intestine was more the cause of this distension than was the colon. This feature was also observed whilst the patient was on Bougainville. Both there and at the hospital in Sydney for the first three or four weeks after his admission, colicky abdominal pains were one of his chief complaints. The abdominal distension slowly but steadily diminshed, concurrently with the improvement in the stools.

It has been mentioned earlier in the description of this case, that adult forms of *Necator americanus* were recovered from the stools on Bougainville, and that in spite of repeated searches, no other pathogens had been found. Apart from hookworm ova, which were present in all specimens examined until July 3, and which were reported on occasions to be plentiful, no amœbæ, cysts or other pathogens were recovered. Sigmoidoscopy disclosed inflamed mucosa in the rectum and in the lower part of the sigmoid colon, but no ulcers were seen.

It is interesting to record that ova obtained from this patient whilst in the base hospital were incubated, and adult forms of *Ankylostoma duodenale* were produced. Thus it was proved that he had suffered a double infection.

During his stay in hospital on Bougainville, the patient had been given four "drenches" with tetrachlorethylene and oil of chenopodium in combination. After his arrival in Sydney, it was decided, in view of his poor general condition, not to administer any immediate treatment with these drugs, as it was thought that toxic effects might result therefrom. However, on May 10 hexylresorcinol was given, but without any appreciable improvement.

It was not until May 26 that it was thought to be safe to give tetrachlorethylene and oil of chenopodium. This was done then, oil of chenopodium was given again on June 19, and finally on July 3 he was given another combined "drench", all apparently without toxic effects. Thus, this patient, until July 3, had received eight "drenches", and yet hookworm ova were still plentiful in his fæces.

On the suggestion of Dr. G. A. M. Heydon, of the School of Public Health and Tropical Medicine, Sydney, it was proposed to pass a duodenal tube and administer through it one gramme of hexylresorcinol in 1,500 millilitres of water, over a period of several hours. It was thought that by this means any excess of mucus in the small bowel would be likely to be dealt with, and so the hexylresorcinol would be made more effective. Furthermore, as his general condition had improved so much by July 3 it was proposed, if his blood count was satisfactory, to repeat in the near future the combined treatment with tetrachlorethylene and oil of chenopodium.

Until the third week in June, his hæmoglobin value varied between seven and nine grammes per 100 millilitres, the minimum being 5·9 grammes per 100 millilitres on May 19. However, at the end of June the hæmoglobin value began to rise. This rise was assisted by a transfusion of two litres of blood on June 26, and on July 2 it reached 12·5 grammes per 100 millilitres, the highest figure recorded since February 28, which was fourteen days after his admission to hospital on Bougainville. This rise in hæmoglobin value occurred concurrently with the improvement in his general condition which was noticed during the latter part of June and early July.

Four doses of "Anahæmin", varying between four and six millilitres, were given purely as a hæmatopoietic stimulant. In addition, iron and ammonium citrate, up to 90 grains per day, was given, and when, as on Bougainville, it was found that this gave rise to abdominal discomfort, the proprietary preparation "Colliron" was substituted, with benefit.

The reticulocytes varied on different occasions between 3% and 8% of the red cells, indicating that the bone marrow had retained its regenerative powers in spite of the intestinal hæmorrhage, which had continued over a period of approximately four months.

The white blood cell count varied between 10,000 and 18,000 per cubic millimetre, the maximum eosinophilia (39%) being recorded with the latter count on June 19.

During transit to Australia on the hospital ship, the patient received a blood transfusion of three pints. Between April 23 and June 26, he was given a further 11 litres, a total of 46 pints of blood since his illness began.

In addition to the special investigations previously mentioned, the following examinations were performed. Attempted culture of microorganisms from the blood was without result. The hippuric acid liver function test produced a normal result. The serum bilirubin content was normal. The bilharzia complement fixaton test produced negative results. The plasma protein content per 100 millilitres was as follows: on April 23, 4·1 milligrammes; on May 4, 4·4; on May 19, normal. Examination by means of a barium meal and enema was contemplated, but it was decided to delay these investigations until the patient was fully in the convalescent stage.

The clinical record of this patient covers the time when he was first admitted to hospital on Bougainville on February 25, 1945, and period of his stay in a base hospital in Sydney (July 3, 1945). On the latter date there was every reason to believe that his convalescence towards recovery would not be long delayed.

The main features of his illness are as follows: (*a*) the extremely severe and prolonged form of illness from which he suffered; (*b*) the long-continued melena produced by persistent hæmorrhage from the small intestine; (*c*) the occurrence of a lung abscess, which completely resolved; (*d*) the fact that, during a period of five months, it was necessary to give 46 pints of blood by transfusion to tide the patient over his illness; (*e*) the discovery that even after eight "drenches" with vermifuges, hookworm ova were still plentiful in his fæces; (*f*) the double infection with *Necator americanus* and *Ankylostoma duodenale.*

It is thought that the detailed description of this case is warranted by its many interesting and instructive features.

General Discussion.

In the great majority of cases, ankylostomiasis is a relatively mild disease amongst Australian army personnel. In many, the infestation has been a chance finding, the soldier complaining of no symptoms which might be attributed to this infection. Two reasons suggest themselves as an explanation for the mild character of the disease—namely, the absence of repeated infestation of any severity, and the good general nutrition of the men, consequent upon a well-balanced and adequate diet, except during those periods when operational difficulties prevent other than basic rations from being available.

However, a large group of men in whose cases the diagnosis was established were found to be suffering from what might be described, in broad terms, as general ill-health. In these cases the common symptoms were abdominal (and especially epigastric) discomfort, lassitude, anorexia, and the sequelæ of mild to moderate anæmia, such as dyspnœa on exertion or œdema of the ankles.

The third group, consisting of three patients only, presented themselves with an acute form of the disease, the essential feature being severe anæmia of rapid onset. In many respects in these cases the clinical picture resembled that of continued gastro-intestinal hæmorrhage from peptic ulceration, and repeated transfusions were needed to carry them through their illness. In the three acute cases studied, in spite of the obvious explanation—namely, continued intestinal hæmorrhage—it was thought that the anæmia was so persistent that some depression of the red blood cells series in the bone marrow might be occurring to account for the lack of response to treatment. With this in view, sternal marrow puncture was carried out on two of the patients. Findings indicated no lack of maturation and no depression of the erythroblastic series. The degree of anæmia reached in such a short time after primary infection cast a new light on the state of affairs amongst those of us who were relatively inexperienced in this disease. One patient's hæmoglobin value fell to five grammes per 100 millilitres, the red blood cell count being 2,100,000 per cubic millimetre, five weeks after his symptom of "ground" itch. Another arrived at the hospital approximately six weeks after his initial invasive symptom, with a hæmoglobin value of 4·5 grammes per 100 millilitres, and a red blood cell count of only 1,700,000 per cubic millimetre. In one of the cases long-continued intestinal hæmorrhage was an outstanding feature, and in the three acute cases frank melena occurred—an unusual happening in this disease.

The course that the larvæ take within the body, after gaining access through the skin, was clearly demonstrated in some 25 cases, for these patients gave a classical history of the march of the early invasive symptoms—namely, "ground" itch, followed by respiratory symptoms, and then abdominal symptoms. Of especial interest was the occurrence of a lung abscess in one case. In two standard text-books available on tropical diseases, lung abscess is not mentioned as a complication of ankylostomiasis. Apparently not only had the passage of large numbers of larvæ through the lungs in this case given rise to an irritation within the lung parenchyma, which was commonly present in others, but a superadded infection with pyococcal organisms had occurred to the extent of leading to localized and frankly suppurative pneumonitis. The abscess completely resolved.

The extreme degree of eosinophilia which occurred in a few of the cases was interesting. Whitby and Britton, in the fourth edition of their "Disorders of the Blood", state that "an eosinophilia of 90% has been observed in acute cases, the phenomenon taking three to four months to develop from the time of the original infection". In one of the acute cases studied (that of Private N.), the maximum eosinophilia reached was 88%, this figure being recorded approximately four months after the probable date of the primary infection. Perhaps of greater significance were the high total white blood cell count and the absolute number of eosinophile cells in a few of the cases. The maximum figures were 60,000 and 51,000 cells per cubic millimetre respectively; these occurred in one case during the convalescent period, but adult worms (*Necator americanus*) were subsequently proved to be still present. Experience has shown that eosinophilia may last in this disease for four to six weeks and sometimes longer after the worms have been eradicated. If this interval is borne in mind, persistent eosinophilia, when no other cause is apparent, may be taken to indicate the probable continued presence of worms.

A diagnostic pitfall was learnt early, namely, that for some time after primary invasion through the skin—in one case encountered the period was sixty-one days—repeated fæces examinations for hookworm ova are likely to produce negative results, even in the presence of definite abdominal symptoms which would lead one to suspect that the larvæ had attached themselves to the mucous membrane of the upper portion of the small intestine. One explanation obviously lies in the fact that it takes several weeks (in one experimental series fifty-four to fifty-seven days) for the larvæ to develop into adult female worms capable of producing eggs.

Whether or not vermifuges are as effective in dislodging immature worms as they are in dislodging mature worms is not known. But the experience at this hospital would suggest that such is not the case, for the recovery after a "drench" of worms from several patients soon after the onset of their abdominal symptoms, and from two when obvious intestinal hæmorrhage was occurring, was either very disappointing or entirely non-existent. The explanation of this is not clear. The practice adopted was to give vermifuges as soon as the diagnosis was established or presumed on strong clinical evidence. In any case, the experience of authorities has shown that the most certain way of establishing the diagnosis in this disease is by the recovery of worms after the administration of vermifuges, and not by waiting for the appearance of ova.

In recent years, reports have been appearing of cases of Wiengarten's syndrome or tropical eosinophilia, in which the condition has responded to the administration of a few doses of arsenicals such as "Novarsenobillon" or "Mapharsen". The ætiology of this condition is at present obscure. But it has been suggested that the respiratory symptoms and signs in this syndrome, and the eosinophilia, may have a basis in some acarine or other parasitic infection. If such is the case, and if an analogy may be drawn with ankylostomiasis, then it may be reasonable to administer arsenicals to patients during the period when the early invasive symptoms of this disease, particularly the respiratory symptoms, are occurring. As the opportunity presents itself, it is intended to put this theory to the test, given though it may be on empirical grounds.

Summary.

1. Experiences with hookworm disease occurring amongst Australian army personnel in New Guinea and on Bougainville, Solomon Islands, are recorded.

2. The mild nature of the infection in the great majority of cases is stressed.

3. Descriptions of three acute cases are given, each resulting in severe anæmia of rapid onset, and being accompanied by melena. Two were due to infection with *Necator americanus*, the remaining case being due to a double infection with *Necator americanus* and *Ankylostoma duodenale.* In one of these cases a lung abscess developed,

and the patient had a prolonged and serious illness. Another patient was proved to have heavy infestation of approximately 3,500 worms.

4. A group of cases demonstrating the classical early invasive symptoms occurring in their chronological order is described.

5. The almost invariably good response to tetrachlorethylene and oil of chenopodium given in combination is demonstrated.

6. Some pitfalls in early diagnosis in this disease are discussed, and the extremely high degree of eosinophilia that occurred in several of the cases is recorded.

7. It is suggested that hookworm disease should be borne in mind by civil medical practitioners treating discharged service personnel after this war, especially those who may present themselves with anæmia of indefinite ætiology, ill-defined abdominal symptoms, or vague, general impairment of health.

Acknowledgements.

It is with thanks that acknowledgement is made to the members of the medical division of the Australian general hospital at which this work was carried out for their cooperation and help in compiling the clinical notes. In addition, Major V. J. McGovern, pathologist attached to the hospital, and his laboratory staff were of much assistance by their painstaking work, particularly with regard to the many blood examinations performed. My thanks are also due to Lieutenant-Colonel Bruce Hall, O.C., medical division of an Australian base hospital, for the detailed notes he kindly supplied of the progress of one of the patients whilst in hospital on the mainland.

The Director-General of Medical Services has given permission for the publication of this paper.

References.

(1) "Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases", Sixth Edition, 1943, page 1255.

(2) P. Manson-Bahr: "Manson's Tropical Diseases", Eleventh Edition, 1941, page 811.

◆

SOME OBSERVATIONS CONCERNING THE USE OF HYPNOSIS AS A SUBSTITUTE FOR ANÆSTHESIA.

By R. L. H. Sampimon, M.D. (Leyden) and Qualified Dentist (Munich),
Lieutenant, Royal Netherlands Forces,
and
M. F. A. Woodruff, M.D., M.S. (Melbourne),
Captain, Australian Army Medical Corps.

The present article is not intended as a general discussion of the use of hypnosis in surgery, nor does it record any important new discovery, for the possibility of performing certain operations under hypnosis has been known since the pre-Listerian era. It is simply an account of certain observations made in rather unusual circumstances and of a kind probably unfamiliar to the majority of British and Australian surgeons.

The cases described were all encountered at a prisoner of war hospital established at River Valley Road, Singapore, from April 12 till August 20, 1945. The hospital received patients from three working camps, and was expected to accommodate up to 150 patients and to provide all necessary medical and surgical treatment, since in no circumstances was evacuation to the main prisoner of war hospitals at Changi or Kranji allowed.

Conditions were primitive in the extreme; there were no proper beds, no mattresses or sheets and no bed pans or urine bottles, and wards and operating theatre consisted of wooden huts with *atap* roofs and mud floors. When the first surgical patient—a man suffering from perforated peptic ulcer—was admitted, the hospital possessed no instruments and no anæsthetics of any kind. However, after some six hours' delay the Japanese produced a reasonable set of instruments, and these, with odd pieces of linen to serve as drapes, we were able to sterilize in a native boiler over an open fire. About four ounces of chloroform were also provided for this first case, and thereafter we received a few ounces from time to time; by exercising considerable care we even managed to build up a small stock, but at no time did this exceed one pound. We were also given a little "Novocain", a few ampoules of spinal anæsthetic agent and one tube of ethyl chloride; but as during our first week we had four major and a number of minor operations, including dental extractions, and as further it appeared probable that we might have to cope at any moment with a considerable number of casualties, occasioned either by air raids or by the tunnelling work on which the working parties were employed, the anæsthetic situation caused us grave anxiety. It was on this account that it was decided to attempt to use hypnosis, instead of the more usual forms of anæsthesia, in selected cases.

It will be seen that the patients described below were for the most part suffering from comparatively minor ailments; but this does not imply that the method was considered unsuitable for major surgery. It was, however, thought wiser to begin with simple cases, and the sudden cessation of hostilities brought our investigations to an abrupt termination before we had progressed very far. Furthermore, it was found desirable to make at least one preliminary induction of hypnosis prior to that under which the operation was to be performed, and most of our major surgery was concerned with acute abdominal emergencies in which no delay was permissible.

Technique Employed.

Hypnosis was induced with the patient lying supine on a table. The method employed was that of convergence fatigue, the patient being instructed to fix his gaze upon the point of a pencil held at the minimum distance of distinct vision. Suggestions were made by word of mouth, and once the patient was soundly asleep these were primarily concerned with the production of anæsthesia, first in the arm to allow a test to be made with a sharp needle, and then in the field of operation. It was also suggested to the patient that he would experience no postoperative pain, that he would have a good night's sleep following the operation, and that he would remember nothing of what had been said to him or had happened to him during the time he was in a hypnotic state. In addition, in the case of patients exhibiting such symptoms as headache, nervousness, insomnia (a common complaint of prisoners of war) *et cetera*, appropriate suggestions were made to deal with these conditions. After the operation was over and all these suggestions had been made, the patient was left sleeping for about ten minutes and then slowly awakened.

As has been mentioned in the introduction, it was found advantageous to induce hypnosis on at least one occasion prior to operation, and this practice was followed in the great majority of cases. In two cases in which the attempt to induce true hypnosis failed, the mere suggestion of anæsthesia enabled the operation to be performed. One of these was surgical (Case II), the other dental (extraction of a lower incisor), and this latter was remarkable in that, after the extraction, the patient reported a feeling of stiffness and numbness in his jaw and lips such as normally follows the use of a local anæsthetic agent. As a result of these cases two other patients were anæsthetized by suggestion only, without any attempt to induce true hypnosis, and both had teeth removed painlessly.

Difficulties and Failures.

A general analysis of cases is given in Table I.

It was found that it was easier to induce hypnosis in reasonably intelligent patients than in mental defectives; but beyond this no general principle could be discovered which would enable one to decide in advance whether a given patient was likely to be easily hypnotized or not. In particular, as the table shows, there was no significant difference in this respect between patients of different races—a fact which was surprising, in view of the

Table I.

Degree of Hypnosis.	Nationality.				Total.
	Australian.	British.	Dutch.	Eurasian.	
Deep sleep	3	4	7	6	20
Superficial sleep	1	—	2	1	4
Hypnosis attempted without success	1	—	—	2	3
Suggestion anæsthesia only; no attempt at true hypnosis	1	1	—	—	2
Grand total	.. ..	.. ..	.. ..	.. ..	29

scepticism expressed by many of the British and Australian troops when they first heard that hypnosis was being used.

The condition described as superficial sleep, though adequate for many psychiatric purposes, was unsuitable for surgery except in the case of very minor procedures. Failure to induce hypnosis of the degree desired for surgical purposes was sometimes inexplicable; but in three cases the reason for the failure seemed fairly clear. Two of these patients suffered from eye disturbances; one (surgical Case II) was a hypermetrope whose minimum distance of distinct vision was about one yard, and the hypnotist accidentally allowed his head to come between the eyes of the patient and the pencil point during the induction stage; the other was asthenopic and could not keep his eyes fixed upon the point. The third patient suffered from deafness, which was not recognized at the time; consequently he did not hear many of the suggestions made to him.

Post-operative pain was rare and amnesia was usually complete; the exceptions are noted below, but in general it may be stated that they were due either to omission of the appropriate suggestions or to waking the patient too soon (that is, less than ten minutes) after the final suggestions had been made.

Reports of Cases.

Dental Cases.

In all there were 23 patients on whom dental extractions were performed. These were not specially selected, and many of them had several teeth extracted during one session. Thus, for example, in one case a lower third molar, an upper molar and a lower premolar were removed. In every instance the cooperation of the patient was freely employed; thus, once sleep was induced, the patient was told to sit up, to open his mouth, to rinse, to spit and so on, and such orders given by the hypnotist were always promptly obeyed.

On being awakened, almost every patient expressed surprise at finding himself in the operating theatre (we used the same room for surgical and dental cases) and refused to believe that a tooth had been removed until he located the gap with his tongue. In only two of the cases was there any post-operative pain. One of these patients suffered from a dry socket. The other case was of particular interest, in that the pain almost certainly resulted from the fact that the usual post-operative suggestions had been omitted. This occurred because after the extraction there was a considerable discharge of pus from the alveolus, and it was considered advisable to awaken the patient quickly because of the risk of inhalation. This patient had been in no pain when he first woke up; but about three-quarters of an hour later severe pain suddenly commenced, continued for about five minutes, and then as suddenly diminished. It did not disappear completely, however, but remained for some hours at about the same intensity as normally occurs after dental extraction. A possible explanation of the severe pain of short duration would seem to be that the patient mentally relived the period of extraction as a result of the omission of the suggestion of amnesia; the subsequent mild pain must, of course, be attributed to the omission of the suggestion of painless recovery.

Surgical Cases.

Case I.—Private A.S., an Australian, aged thirty-four years, had painful ingrowing toenails which had resisted all previous treatment, and it was decided to perform partial amputation of the terminal phalanx with complete removal of the nail and nail bed. Hypnosis was successfully induced at a preliminary session; the patient was in a deep sleep and lost all power and sensation in his limbs. On the following day an attempt was made to induce hypnosis again with a view to operation. On this occasion, however, the patient was nervous and excitable, his sleep was only superficial, and he complained of pain when the incision was made, so eventually we had to resort to using local anæsthesia.

This case must therefore be reckoned a failure, but it was noteworthy that there was complete absence of post-operative pain, and this we attribute partly to the fact that it was suggested to the patient while superficially asleep that he would experience no further pain in the toe.

Case II.—Sergeant H., a Dutch Eurasian, aged forty years, was admitted to hospital suffering from septicæmia and cellulitis of the leg consequent on an infected laceration. The septicæmia was controlled with sulphadiazine, and it then became necessary to evacuate a localized collection of pus in the cellular tissues over the left tibia. This was done under ethyl chloride anæsthesia; but drainage was inadequate, and one week later, after the usual preliminary session, an attempt was made to hypnotize the patient for the purpose of further operation. Owing to a technical error referred to previously, hypnosis was not completely successful; but a state of superficial sleep was induced which proved sufficient to allow an incision over two inches long to be made and the abscess cavity explored. The patient complained of a little pain during the operation, but subsequently the leg was completely free from pain, and recovery was uneventful.

Case III.—Private R.C., a Dutch Eurasian, aged forty years, was admitted to hospital with an infected laceration of the right index finger of six days' duration. On examination of the patient, a wound half an inch long and discharging thick pus was seen over the flexor aspect of the middle phalanx; the finger was extremely swollen and the dorsum of the hand œdematous, and severe pain was felt on flexion of the finger, together with tenderness over the limits of the flexor tendon sheath. The patient's temperature was 101° F. and his pulse rate 100 per minute. A diagnosis of suppurative tenosynovitis was made, and after a preliminary session operation was undertaken the same day under hypnosis. The patient was put into a deep sleep and the whole upper extremity was rendered anæsthetic. A tourniquet was applied to the upper part of the arm, and hand and arm were supported on a small table. The hand was held with the thumb somewhat opposed and the third and fourth fingers partly flexed; but on being ordered by the hypnotist to do so, the patient immediately straightened his fingers and abducted his thumb, thus giving adequate access to the index finger and rendering it unnecessary for the hand to be held by an assistant. The original wound was explored and found to extend down to the flexor tendon sheath, but the latter did not appear to contain pus. An incision was then made over the proximal phalanx, and pus was evacuated from the cellular tissues of the finger; again the tendon sheath was clearly seen, but as it did not contain pus it was left severely alone. The whole operation lasted about twenty minutes, and during this time the patient did not appear to experience any pain, nor did he move his hand except as ordered by the hypnotist. He was told while still asleep that he would not experience any more pain in the finger and that he would remember nothing of the operation. On being awakened he expressed surprise at finding himself in the operating theatre; he had no idea that his hand had

Sulphamerazine

— NICHOLAS

NICHOLAS PTY. LTD.
ETHICAL DIVISION

℞

Sulphamerazine

In each tablet:

0.5 gramme (7.7 grains)
2-Sulphanilamido-4-methyl
pyrimidine.

Nicholas

In bottles of 25, 100 and 500 tablets

A NICHOLAS ETHICAL PRODUCT

ARGYROL BRAND SILVER VITELLIN
TRADE MARK REGISTERED

ADEQUATE STOCKS OF

ARGYROL

ARE OBTAINABLE FROM PHARMACISTS EVERYWHERE

The specific uses of ARGYROL, its physico-chemical properties, and the technique of its employment are indicated in such conditions as:—conjunctivitis, cystitis, prostatitis, sinusitis, otitis media, head colds and pharyngitis. The facts disclosed have been compiled from actual clinical data.

The fundamental characteristics of ARGYROL, as opposed to other so-called mild silver proteins, are:—

A In respect to the concentration of its silver ions. No other silver protein has so fine a colloidal dispersion or so active a Brownian movement as ARGYROL.

B Its pH and pAg are carefully adjusted to the treatment of delicate mucosal surfaces.

C Its bacteriostatic, detergent and inflammation dispelling properties have never been duplicated. ARGYROL is mild and non-irritating regardless of the concentration in which it is employed; it is also non-toxic.

ARGYROL
Registered Brand Trade-Mark
Silver Vitellin
1 oz. net weight
Made in U.S.A.
from the Laboratories of A.C. Barnes Company New York, U.S.A.

Sole Distributors:

FASSETT & JOHNSON LTD.
36/40 CHALMERS STREET, SYDNEY, N.S.W.
or LEVY BUILDING, MANNERS STREET, WELLINGTON, N.Z.

There is NO Chemical Equivalent for ARGYROL

been operated on, but remarked that it was no longer painful. On returning to the ward he fell asleep almost immediately. Three days later another incision had to be made, this time on the dorsum of the finger, and through drainage was established. Once again hypnosis was used with complete success, and it was also used on the following day when the drain was removed. Recovery was uneventful, and it appears that the patient will be left with a reasonably mobile finger.

The most striking feature of this case was the complete absence of post-operative pain despite the severity of the inflammation. At no period during the post-operative period was morphine or any other hypnotic drug required.

Case IV.—Sergeant W.H., British, aged thirty-two years, had a paronychia necessitating simple avulsion of a finger nail. Hypnosis was induced on the day prior to that intended for operation, but his sleep was so sound that the nail was removed forthwith. Once again the cooperation of the patient was perfect, the operation was painless and there was no opst-operative pain.

Case V.—Private S., a Dutch Eurasian, aged twenty-eight years, received a blow on the dorsum of the hand from a sledge hammer, and fracture of the metacarpus was suspected; but there was so much swelling and he complained of so much pain that adequate clinical examination was impossible; so, since X-ray examination was unobtainable, an accurate diagnosis could not be made. Next day the swelling had subsided somewhat, but the patient still did not tolerate examination well; hypnosis was therefore induced, and it was then easy to demonstrate that no fracture was present. While still asleep the patient was told that the hand would not be painful any more, and on being awakened he not only no longer complained of pain, but was perfectly willing to allow the hand to be examined.

The sixth subject was Staff Sergeant W., an Australian, aged thirty-six years, who was used as a test subject. Hypnosis was induced for purely psychiatric reasons, in order to determine what degree of relaxation of the abdominal muscles and of the anal sphincter could be obtained. With regard to the former, it was found that the relaxation under hypnosis was considerably greater than that obtained with the voluntary cooperation of the same patient when awake, but not so great as that normally obtained under ordinary surgical anæsthesia. With regard to the latter, it was found easy to make the patient bear down and go through the motions of defæcation; but relaxation of the sphincter to the degree required for operations such as hæmorrhoidectomy was not obtained. This failure was probably due, at any rate in part, to the difficulty of conveying to the mind of the patient exactly what was required of him.

Summary and Conclusions.

1. An account is given of some 29 cases illustrating the use of hypnosis as a substitute for anæsthesia.

2. The use of hypnosis in these cases was necessitated by rather unusual circumstances, which one may reasonably hope never to encounter again; but the method was found to possess certain advantages which may justify its use in selected cases in ordinary surgical practice. The advantages referred to are as follows: (i) Nervousness of the patient is entirely eliminated. (ii) Full cooperation of the patient can be secured. (iii) Post-operative pain can be reduced to a minimum, and even in many cases prevented altogether. (iv) The usual complications of other forms of anæsthesia, including post-operative vomiting, do not occur. (v) It appears that in dental cases in which hypnosis is used there may be less hæmorrhage and more rapid healing of the wound than normally occur when other methods are used. (vi) The method may be used in certain cases in which ordinary anæsthetics are contraindicated or cannot easily be employed—for instance, for patients requiring dental extraction in whom pronounced trismus renders the use of local anæsthetics difficult, and when for some reason or other general anæsthesia is contraindicated.

3. The method appears to be safe and reliable, and in particular, once a satisfactory state of hypnosis is induced, the possibility of the patient's waking prematurely during the operation is remote. There is, of course, the risk that by the abolition of post-operative pain complications which supervene may pass unrecognized; but once this possibility is realized the danger is thereby reduced to a minimum.

4. The present investigation unfortunately (or fortunately) did not go very far; but the results obtained at least indicate some of the possible surgical applications of hypnosis, and suggest that further work done along similar lines might lead to results of considerable value. Such work, if it is to be successful, must be undertaken by a surgeon and a psychiatrist working in collaboration.

Acknowledgement.

I am indebted to the Director-General of Medical Services for permission to publish this paper.

THE ANTI-O AGGLUTININ IN HUMAN BLOOD, WITH THE REPORT OF A CASE OF ITS OCCURRENCE.

By Noel R. Henry, B.Sc.,
From the Pathology Department, Brisbane General Hospital.

The normal iso-agglutinins α and β found in normal human serum are familiar to everyone. However, other agglutinins, both normal iso-agglutinins and immune iso-agglutinins, are present in human serum; these are not so well known, primarily because of their rarity, and also because they are more difficult to demonstrate. Some of these are set out and explained in compact tables by Boyd(14) and also in War Memorandum Number 9 of the Medical Research Council.(15) The rôle of the agglutinogens A and B in transfusions is too well known to discuss here, but the rôle of the O agglutinogen is not so well known. For a considerable time the "O" was assumed to imply absence of agglutinogens, but it is now known that the O factor is a definite and demonstrable antigen.

Naturally occurring agglutinins for the M and N factors are rare. Wiener(1) reports five cases in which normal anti-M agglutinins were present, and two cases in which immune anti-M agglutinins were present.(2) To the best of my knowledge no cases in which naturally occurring anti-N agglutinins were present have been reported, and to date only one rather unconvincing report(3) of immune anti-N agglutinins has been published. Certain specimens of normal serum, however, contain atypical iso-agglutinins, among which may be mentioned the anti-P[1] agglutinin (extra agglutinin I) and the anti-O (or, as it is sometimes unfortunately called, α_2) agglutinin. These atypical agglutinins are usually cold agglutinins—that is, they act more intensely at low temperatures and are only rarely active at 37° C. They are usually of low potency, and the reactions normally are much weaker than the ordinary ABO reactions.

The case to be described relates to the anti-O agglutinin. The anti-O agglutinin is an atypical cold agglutinin, which is found most frequently in blood of group A_1B. It also occurs in group A_1 blood and in a few specimens of group B blood. Thomsen(5) has postulated that the serum detects a special agglutinogen O determined by a corresponding gene O. The variable reactions with group A and group B blood were attributed to heterozygosity, and the weakness of the reactions to the partial dominance of genes A and B over gene O. Because it was found to produce agglutination in blood of subgroup A_2, but not in blood of subgroup A_1, it was thought to be related to the qualitative differences in these subgroups, and was called the α_2 agglutinin. However, it was found to produce intense agglutination in group O blood and weak or no agglutination in group A_2B blood, and, as Wiener and Karowe(4) have recently pointed out in a most interesting paper, this led to the opinion that the reactions must be due to a special agglutinogen O, which was a basal substance present in all cells. Of two other postulates described by Wiener and Karowe,(4) the first, by Hirzfeld,(6) was that this antibody is a human species agglutinin, the varying avidities of the serum for different cells being due to the amount of species antigen on the cell surface, group O cells containing all species antigen, while A and B antigens displaced or suppressed some of the surface antigen in blood of the other groups. The second postulate, by Dockeray and Sachs,(7) was that it was a special sort of autoagglutinin. On the other hand, the saliva of persons of all blood groups (the secretors, of course), which contains the respective agglutinogens, combines with anti-O serum and neutralizes the agglutinin: this indicates that the O antigen is a part of the antigenic pattern of all groups.(8)

---

[1] The recent report by Wiener and Unger(13) of a case of iso-immunization by factor P summarizes the knowledge of this factor.

Matta(10) has made a detailed study of the O agglutinogen, using immune anti-O serum prepared by immunizing goats and rabbits with group O blood. He does not agree that O is a species agglutinogen, because, if this were so, it should be possible to absorb anti-O serum by cells of all groups. He proved that certain types of AB, A and B cells were not able to absorb the anti-O agglutinin even when the serum was diluted or when the attempt at absorption was repeated. Also, if O were a species agglutinogen, and were suppressed by A and B agglutinogens to varying degrees, then anti-human serum should agglutinate group O cells to a higher titre than the cells of blood of other groups, particularly group AB. Matta, using six different samples of anti-human serum prepared with group O cells, found that AB cells were agglutinated to practically the same extent as group O cells. Matta, then, is of the opinion that the O antigen is a specific agglutinogen for O cells.

As has been mentioned above, the atypical agglutinins are rare, and usually the reactions are weak, so that the case to be described, in which the patient's blood contained a relatively potent anti-O agglutinin, will be of interest.

Report of a Case.

Mrs. E.R., aged thirty-three years, was referred to me in March, 1944, for determination of the Rh type of her blood. Her first pregnancy had resulted, in June, 1941, in a normal male infant, who is alive and well. Her second child was a female, born in March, 1943; the infant was three and a half weeks premature and was jaundiced when born. This infant received her first blood transfusion from her father when she was three weeks old. Two days later she received another transfusion from an unknown donor, and died the same day. Unfortunately, no blood studies of this infant are available. The patient, when referred to me in March, 1944, was in the eighth month of her third pregnancy. Her blood proved to belong to group AB Rh+, and that of her husband to group O Rh−. Moreover, her serum contained an atypical antibody. I immediately began to think of anti-Hr serum, but a few tests on cells of known types soon dispelled this idea. The antibody proved to be a "cold agglutinin" which acted intensely on all specimens of group O blood and on some specimens of group A blood irrespective of their Rh type. It was without action on a few specimens of group AB blood I tested.

The titre of the cold agglutinin against group OMN Rh+ cells was determined by serial dilutions in small test tubes and was found to be 32 at 4° C. and 16 at room temperature, while at 37° C. it was still active with a titre of 2·0. The following results (Table I) were obtained when the serum was mixed with an equal volume of a 3% suspension of the respective cells, taken at random, and read after the mixture had stood for two hours at 4° C. and had been centrifuged.

TABLE I

Reactions of the Antibody with Cells of Known Groups.

Group of Cells.	Result.	Group of Cells.	Result.
A Rh+	++	B Rh+	+
A_2MN Rh+	++++	O Rh+	++++
A_1MN Rh+	±	A	−
O Rh+	++++	O	++++
A Rh−	−	A	tr.
BM Rh+	+	O	++++
A_2M Rh+	+++	A	+++
A_1BMN Rh−	−	A	tr.
OM Rh+	++++	O Rh+	++++
OMN Rh+	++++	O Rh− ..	++++
O Rh−	++++	A Rh−	+++

With these results in mind, and as the patient lived in the country, I reported to the obstetrician as follows:

> The patient belongs to group AB Rh+. Her serum contains an irregular agglutinin most active at 4° C., but also active at 37° C., which has the specificity of an anti-O agglutinin. This is unrelated to fœtal immunization. However, it is imperative that the patient be not transfused with group O blood with which she is strongly incompatible. A group A_1B donor is most suitable for her. The husband belongs to group ORh−.

The patient was admitted to the Brisbane Women's Hospital in premature labour on March 29, 1944, and a male infant was born the same day. The child's hæmoglobin value on the same date was 165% (Haldane) and his blood group B Rh+. On the fourth day of life the child became mildly jaundiced, but was discharged from hospital without treatment on the fourteenth day with a hæmoglobin value of 110%. The hæmoglobin value dropped alarmingly, however, and on the twenty-first day of the child's life the value was only 60%. The infant received his first transfusion the same day from a donor of group B Rh+. His hæmoglobin value rose by 25% as a result, and he progressed slowly; but by the age of about four months he was quite well, and remains so. The results of investigations of the hæmoglobin value are shown in Table II.

TABLE II.

Progressive Hæmoglobin Values in the Case of Baby R.

Date.	Hæmoglobin Value. (Percentage.)	Date.	Hæmoglobin Value. (Percentage.)
March 29	165	April 19[1]	
March 31	135	April 20 ..	85
April 1	140	April 22	78
April 3	110	April 24	78
April 5	120	April 27	80
April 11	110	May 3	75
April 18	60	May 8	65

[1] Blood transfusion.

Unfortunately no other blood studies were carried out. A further sample of blood was taken from the mother on April 20, 1944, and it still contained the antibody of the same specificity and thermal pattern with the following titres against the same group OMN Rh+ cells: at 4° C. the titre was 16, at room temperature (22° C.) 8·0, and at 37° C., 4·0; these results are the same as the earlier results, within the limits of experimental error. The mother's serum taken before and after parturition strongly agglutinated the baby's cells ("+++" at 4° C. and "++" at 37° C.).

From the results of the above tests on known cells, as well as the titre against group O cells, it seemed evident that I was dealing with an anti-O agglutinin. In view of the family history, it was interesting now to know whether the agglutinin was an immune agglutinin resulting from the pregnancies. The first child belonged to blood group A and the third child (the present infant) to blood group B. The blood group of the second infant remains unknown. It is obvious that with the mating of a woman of blood group AB and a man of blood group O, all offspring must belong to either blood group A or blood group B, and, moreover, must be heterozygous. Therefore the genotype of the first child must be AO and that of the third child BO. Could the O gene in these heterozygous types of blood immunize the mother? For this to be possible, obviously the mother must lack the agglutinogen O (and also A_2) from her genetic composition. In other words, she must belong to subgroup A_1B. Major R. J. Walsh, of the Blood and Serum Preparation Unit, Sydney, settled this matter for me, at the same time as he kindly allotted the individual members of the family into their Hr types to exclude all possibility of the Hr factor's being involved. His results are as follows:

Father	O Rh− Hr+
Mother	A_1B Rh+ Hr+
First child	A_1 Rh+ Hr+
Second child	B Rh+ Hr+

The mother's serum agglutinated Hr− cells as well as Rh− cells. These results, of course, rule out the Hr factor, and also establish the mother's blood as of subgroup A_1B.

Experimental Investigation.

In view of the unusual potency of this serum and the fact that it was active at 37° C., ten millilitres of the second specimen were dried and sent to Dr. A. S. Wiener, of New York. He generously examined the serum and obtained some interesting results, which will be shown in the following tables. Table III shows the results of titrations of the serum against cells of different groups. This table graphically depicts the thermal range of the antibody and gives some idea of its specificity. However, the specificity of the antibody is best illustrated in Table IV.

TABLE III.
Thermal Range of the Anti-O Agglutinin.

Temperature.	Titre (in Units) Against Cells as Under.				
	O	A_2	A_1	B	A_1B
4° C.	6	6	2	2[1]	0
Room ..	3	3	1	1	0
37° C.	1·5	1·5	0	0	0

[1] Group B cells from one other individual gave a titre of 0.

These findings amply confirm the random results given in Table I and demonstrate in clear fashion the marked avidity of the anti-O serum for O and A_2 cells. As has been mentioned before, most anti-O serum is of low potency, and consistent results are obtained only with O and A_2 cells. However, this particular anti-O serum was of sufficient potency to yield satisfactory experimental evidence in support of Wiener's theory that if anti-O serum reacted with those properties determined by genes O and A_2, but not with those determined by A_1 or B, then the only blood which would fail to react would be that of genotype A_1B, that of genotype A_1A_1 and that of genotype BB if the serum were of sufficient potency.

TABLE IV.
Specificity of the Anti-O Agglutinin.

Group of Cells.	Number Tested.	Strength of Agglutination.			
		++++	++	±	−
O	24	24	0	0	0
A_2	2	2	0	0	0
A_1	10	0	8	1	1
B	8	0	7	0	1
A_1B	2	0	0	0	2
A_2B	1	0	1	0	0

From Table IV it is seen that the serum reacts strongly with blood of group O (genotype OO) and group A_2 (genotypes A_2A_2 and A_2O). Of ten specimens of group A_1 blood, eight reacted moderately (probable genotype A_1O), one weakly (genotype A_1A_2) and one not at all (genotype A_1A_1). Similarly, of eight specimens of group B blood, seven reacted moderately (genotype BO) and one not at all (genotype BB). The two specimens of A_1B blood failed to react, and the A_2B specimen reacted moderately. It will be remembered that the mother's serum reacted strongly with the blood of the infant (genotype BO). The following excellent table (Table V) from Wiener's paper(8) summarizes the situation succinctly.

Matta,(10) using his anti-O rabbit-immune serum, obtained results closely comparable with those shown in Table IV of this paper. He also postulated a new genetic theory of inheritance of the blood groups based on four genes instead of two, subdividing group B into two subgroups B_1 and B_2, and group AB therefore into four subgroups A_1B_1, A_1B_2, A_2B_1 and A_2B_2. This, however, has not been confirmed by other workers.

TABLE V.
(*After* Wiener.(8))
Reactions of Anti-O Serum with Blood of the Various Groups.

Group of Blood.	Reactions with Antiserum.				Reactions with Anti-O Serum.
	Anti-A.	Anti-A_1.	Anti-B.	Genotype.	
O	−	−	−	OO	Strong.
A_1	+	+	−	A_1A_1 A_1A_2 A_1O	None. Weak.
A_2	+	−	−	A_2A_2 A_2O	Strong.
B	−	−	+	BB BO	None. Weak.
A_1B	+	+	+	A_1B	None.
A_2B	+	−	+	A_2B	Weak.

Matta's table is reproduced below (Table VI) and should be compared with Table IV.

TABLE VI.
(*After* Matta.(10))
Action of Purified Immune Anti-O Serum on Cells of Different Types.

Group of Cells.	Sub-group of Cells.	Number Tested.	Strength of Agglutination.			
			++++	++	+	−
O		50	50	0	0	0
A	A_2	12	12	0	0	0
	A_1	24	0	12	7	5
B	B_2	6	6	0	0	0
	B_1	21	0	12	5	4
AB	A_1B_1	9	0	0	0	9
	A_1B_2	12	0	0	12	0
	A_2B_1	3	0	0	3	0
	A_2B_2	3	0	3	0	0

From Tables IV and VI it can be seen that the anti-O serum gives reactions of different strengths according to the "gene dose". This statement is clear after examination of the last two columns of Table V, which show the varying intensities of reaction for the different genotypes. As Wiener(8)(11) has pointed out, the Hr factor bears a similar relationship to the Rh blood types as the O agglutinogen does to the ABO blood groups. The table given in the paper by Wiener, Davidsohn and Potter(11) bears a striking resemblance to Table V of this paper, and shows the reaction strengths of anti-Hr serum with blood of the 21 Rh genotypes.

Discussion.

It cannot be definitely determined whether the anti-O agglutinin in the present case is a natural or an immune agglutinin. The relatively high titre of the agglutinin and the fact that it is active at 37° C. are points in favour of its immune nature, but obviously are not conclusive evidence. On the other hand, a sample of serum withdrawn in April, 1945 (twelve months after parturition), showed approximately the same titres (sixteen at 4° C., eight at room temperature and two at 37° C.) as previous specimens; this is evidence against this antibody's being the result of immunization, since the titre usually decreases when the immunizing stimulus is withdrawn.

In this connexion it is of interest to note that at least one case has been reported(12) in which a patient of blood group A_1B was apparently immunized against the O antigen—in this case by transfusion of group O blood—and possessed an anti-O agglutinin. Again the immunization could not be definitely proved.

Although these cases are rare, they serve to prove that the "universal" donor does not exist. The usual objections to the use of the universal donor are on the grounds of high iso-agglutinin titres, and it is not universally agreed that the donor's serum can significantly affect the recipient's cells. It is, however, obvious that here the so-called universal donor's cells would be attacked by the patient's serum; so we have a major incompatibility, and a transfusion from a "universal" donor would probably result in a severe, if not fatal, hæmolytic reaction.

Summary.

A case is reported of a patient whose serum contained an anti-O agglutinin of unusual strength. Its place in the ABO blood group scheme and the possibility of its immune origin are both discussed.

Acknowledgements.

I am grateful to Dr. A. S. Wiener, of New York, for generously examining this serum, and also for much helpful advice and criticism of this paper. I am also grateful to the patient, Mrs. E.R., whose willing cooperation in supplying a quantity of this serum materially assisted the investigation. I am indebted to Dr. R. Charlton for referring the patient to me, and to Professor J. V. Duhig, director of this department, for permission to publish this paper.

References.

(1) A. S. Wiener: "Blood Groups and Blood Transfusion", Third Edition, 1943, page 219.

(2) A. S. Wiener: "Hemolytic Transfusion Reactions. III. Prevention with Special Reference to the Rh and Cross-Match Tests", *The American Journal of Clinical Pathology,* Volume XII, 1942, page 302.

(3) E. Singer: "Iso-immunization against the Blood Factor N", THE MEDICAL JOURNAL OF AUSTRALIA, July 10, 1943, page 29.

(4) A. S. Wiener and H. E. Karowe: "Diagrammatic Representation of the Human Blood Group Reactions", *The Journal of Immunology,* Volume XLIX, July, 1944, page 51.

(5) O. Thomsen: *"Über die A_1- und A_2- Receptoren in der sogenannten A-Gruppe", Acta Societatis medicorum fennicae duodecim,* Volume XV, 1932, page 1.

(6) L. Hirzfeld: *"Les Groupes sanguines"*, 1938.

(7) G. C. Dockeray and H. Sachs: "Auto-hæmagglutination and Anti-O Agglutinins", *The Irish Journal of Medical Science,* Volume LII, 1941, page 203.

(8) A. S. Wiener: "The Rh Series of Allelic Genes", *Science,* Volume C, December 29, 1944, page 595.

(9) E. Witebsky and N. C. Klendshoj: "The Isolation of an O Specific Substance from Gastric Juice of Secretors and Carbohydrate-like Substances from Gastric Juice of Nonsecretors", *The Journal of Experimental Medicine,* Volume LXXIII, 1941, page 655.

(10) D. Matta: "A Critical Investigation of the Blood Groups and their Medico-Legal Application", Publication Number 11, Faculty of Medicine, Egyptian University, 1937, page 59.

(11) A. S. Wiener, I. Davidsohn and E. L. Potter: "Heredity of the Rh Blood Types. II. Observations on the Relation of the Factor Hr to the Rh Blood Types", *The Journal of Experimental Medicine,* Volume LXXXI, January 1, 1945, page 63.

(12) A. S. Wiener, B. H. Oremland, M. A. Hyman and A. S. Samwick: "Transfusion Reactions: Experience with More than Three Thousand Blood Transfusions", *The American Journal of Clinical Pathology,* Volume XI, February, 1941, page 102.

(13) A. S. Wiener and L. J. Unger: "Iso-immunisation to the Factor P by Blood Transfusion", *The American Journal of Clinical Pathology,* Volume XIV, December, 1944, page 616.

(14) W. C. Boyd: "Rh Blood Factors: An Orientation Review", *Archives of Pathology,* Volume XL, August, 1945, page 114.

(15) "The Determination of Blood Groups", Medical Research Council War Memorandum Number 9, 1943, page 5.

CHONDRITIS OF THE PATELLA.

By NORMAN LITTLE and CARLYLE HUDSON,
Sydney.

CHONDRITIS of the patella has been described by West as chondromalacia and by Cox as traumatic osteochondritis of the patella. The lesion, which has only recently been described in the literature, was first recognized by one of us over seven years ago, and since then many examples have been seen and treated.

In our experience the condition is not uncommon, but it is not widely recognized; yet it is a clinical entity with characteristic symptoms and signs. It is of importance, because it simulates derangements of the menisci, and we know of many patients affected by the condition who have undergone a meniscectomy, only to continue having their symptoms after operation. Chondritis of the patella is a lesion of an area of articular cartilage and probably results from trauma; it is found typically in the inferomedial quadrant, and is characterized by thickening, softening and irregularity of the articular cartilage. The appearance is similar to that produced by *osteochondritis dissecans* of the medial femoral condyle, but so far we have found no involvement of the underlying bone. We consider the condition to be primarily a disease of the cartilage due to contusion and interference with the blood supply. On the other hand, Cox maintains that the true pathological change is to be found in the underlying cancellous bone, and that the change in the articular cartilage is entirely secondary.

Clinical Features.

There is usually a history of a fall onto the knee or a blow on the front of the patella. The accident is followed by acute synovitis, which, however, soon subsides. The subsequent history is one of chronic disability. The chief complaint then is of aching in the front of the knee after prolonged sitting with the knee flexed. The patient usually states that he cannot sit for long at the cinema or in a tram without pain, and that he obtains relief by straightening the knee and altering his position. There is frequently a complaint of clicking or grating behind the patella, but neither true locking nor the sensation of something slipping out of place ever occurs. The most outstanding feature in the collective histories of our patients is the ache in the knee after prolonged sitting. Whenever mention of this symptom is volunteered, one must suspect chondritis of the patella and examine the knee for evidence.

The examination is best conducted with the patient supine and the knee extended. Localized tenderness can be detected on the articular surface of the infero-medial quadrant of the patella by displacing the latter medially and applying digital pressure to the accessible part of the articular cartilage towards the lower pole. Pain is also felt in this situation when the patella is pressed against the femur, while painful post-patellar grating can be elicited in the same situation on movement of the patella against the femur in a vertical direction. Flexion is usually limited by pain over the front of the joint, but the other movements of the knee are full and painless. There is some wasting of the quadriceps muscle; it is, however, not so pronounced as in lesions of the meniscus. A slight effusion usually occurs after exercise, but a large effusion is never seen.

The X-ray examination gives negative results unless the condition is of long standing, when there may be evidence of patello-femoral osteoarthritis. The appearances typical of *osteoarthritis dissecans* have not been seen by us.

Treatment.

Mild and early patellar chondritis responds to counterirritation, which it may be necessary to continue for several months. It is our usual practice to use Scott's dressing, leaving sufficient periods between applications to avoid untoward skin reactions.

Another useful application is *Unguentum Hydrargyri Iodidi Rubri.* The best method of using this is to rub an amount the size of a pea over the front of the knee and then to apply heat until a sensation of stinging is produced, when a further light application of the ointment is made. This procedure is carried out each day for ten days and then repeated after an interval of seven days, if the patient's skin will tolerate it. If the condition is of long standing and fails to respond to a fair trial of conservative treatment, operation is indicated. We usually review the case after three weeks' treatment with counter-

Complevite

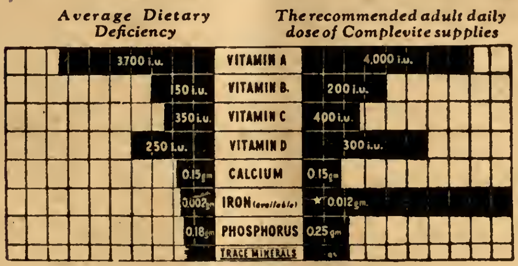
COMPLETE in the most important vitamins and minerals

BALANCED to make good the average deficiencies in modern diet

CONVENIENT dosage, in tablet form

ECONOMICAL — a single supplement for multiple deficiencies

The graph below shows the comprehensive nature of Complevite tablets and also demonstrates the extent to which Complevite ensures optimal nutrition.



**The iron in Complevite exceeds the calculated deficiency expressly to combat the nutritional anaemia so common in children and in women of child-bearing age.*

ANTENATAL CARE

Promote well-being and build up reserves with BEMAX ★

A high level of vitamin B_1 facilitates the chemical changes accompanying the oxidation of glucose in the muscles. By promoting the rapid dispersal of waste products, it delays the onset and reduces the degree of fatigue during muscular exertion.

Bemax is therefore an important part of good antenatal care in the last weeks of pregnancy, a time when reserves should be laid down to ensure (as far as human forethought can) a smooth and easy labour.

The Vitamins & Minerals in ★ BEMAX

Approximate percentage of average daily requirement supplied by 1 oz. of Bemax :—

Vitamin B_1 (Aneurin)	50%	Vitamin B_6 (Pyridoxine) probably - - -	100%
Vitamin B_2 (Riboflavin)	20%	Vitamin E (a-tocopherol)	100+%
Nicotinic Acid (P.P. factor) - - -	14%		
Iron (available) - -	25%	Copper - - - -	25%

Further particulars concerning Complevite and Bemax from Fassett & Johnson, Ltd.,
36/40, Chalmers Street, Sydney, N.S.W.

Products of Vitamins Limited, London, England

SCHERING'S PURE POTENT
HORMONE OF THE
CORPUS LUTEUM

Proluton

THREATENING AND HABITUAL ABORTION: For prophylaxis in the critical third and fourth months, and for active therapy as long as there is pain or bleeding.

FUNCTIONAL BLEEDING: meno-metrorrhagia related to anovulatory cycles or progestin deficiency.

PROLUTON C
for oral administration
Boxes of 12 × 5 mg.
and 12 × 10 mg.

DYSMENORRHEA: in normally developed patients requiring progesterone to correct uterine hypermotility.

PREMENSTRUAL TENSION: the neuropsychiatric disturbance due to premenstrual estrogenic excess.

Ampoules: 2, 5, 10 mg.

SCHERING PTY. LTD.
Sydney, Australia

‘SCUROFORM’

TRADE MARK BRAND

BUTOFORM

in Otorhinolaryngology

The applications of ‘Scuroform’ brand butoform in this sphere are numerous and include laryngitis and dysphagia associated with tuberculosis, syphilis and carcinoma.

In the relief of post tonsillectomy distress, the glycero-alcoholic solution will be found most useful in exercising a local analgesic, antiseptic and hæmostatic effect; the presence of glycerin in the vehicle presenting a further advantage in overcoming dryness of the mucosa.

‘SCUROFORM’ brand butoform is supplied in the following forms:

POWDER
Containers of 25 grammes.

SOLUTION IN GLYCERIN & ALCOHOL
Containers of 25 c.c.

SOLUTION IN OIL
Containers of 25 c.c.

OINTMENT
Containers of 1 oz.

A ‘MAY & BAKER’ PRODUCT

Distributors:

MAY & BAKER (AUSTRALIA) PTY. LTD. - - - - - - - SYDNEY, N.S.W.

irritation, and if no improvement has occurred operation is advised; but, if improvement has taken place, the treatment is continued.

When operation is considered necessary, the joint is opened by a medial parapatellar incision. The patella is tilted round its sagittal plane, so that the articular surface can be visualized, and then the involved area of cartilage is shaved off with a sharp scalpel. The affected articular cartilage has a dull, yellowish tinge; it is roughened and has a rubbery consistency, when felt with forceps. The adjacent synovial membrane is frequently thickened and hyperæmic, while pannus formation at the edge of the articular cartilage is sometimes seen. As a rule these changes are confined to the infero-medial quadrant of the articular surface of the bone; but in some cases they are present over a much larger area. We believe that if more than a third of the area of the articular cartilage is the seat of chondritis, the patella should be removed, and the same procedure is necessary if the classical symptoms of the condition are associated with patello-femoral osteoarthritis. Fortunately, most of the patients whom we have treated have not needed excision of the patella, and they have lost their symptoms after chondrectomy.

We employ the same post-operative treatment after chondrectomy of the patella as we do after meniscectomy; early contraction of the quadriceps and early active movements are encouraged.

Prognosis.

Conservative treatment with counter-irritation is successful only in the early mild cases; symptoms are relieved by excision of the affected articular cartilage in the great majority of cases. So far it has been necessary to remove the patella in one case only; although the patient is free of pain, he complains of weakness of the knee. It remains to be seen in how many of these knees osteoarthritis will develop later.

Comment.

We have encountered patients suffering from both chondritis of the patella and a tear of the medial meniscus. To make the diagnosis of the former in such cases is most important, as the treatment of both conditions can be carried out through the same incision.

Chondritis of the patella can be readily recognized by its characteristic signs and symptoms. If it were more widely recognized and treated, many knees would be spared the early onset of osteoarthritis, and the occasional unnecessary and fruitless meniscectomy would be avoided.

Bibliography.

F. J. Cox: "Traumatic Osteochondritis of the Patella", *Surgery*, Volume XVII, 1945, page 93.

F. E. West: "Diagnosis and Treatment of Internal Derangements of the Knee", *Surgical Clinics of North America*, Volume XXV, 1945, page 111.

TREATMENT OF SUPPURATIVE TENOSYNOVITIS IN THE FINGERS.

By L. Ian Burt,
Acting Surgical Supervisor, Brisbane Hospital.

Treatment of suppurative tenosynovitis in the fingers by the local application of penicillin has produced such good results that I believe that attention should be drawn to this method. The principle can be extended to include ulnar and radial bursitis and infection of the spaces of the hand.

In the first attempts to deal with these conditions the tendon sheath was opened widely, hand baths were given at least once a day, immobilization was used, and the results most often consisted of a sloughing tendon with subsequent amputation, or at the best a stiff finger. In view of these bad results and in the knowledge that once drainage was well established, extension beyond the limits of the sheath was unlikely, more conservative incisions were used—usually two only—one in each of the two proximal phalanges placed on the same side or on opposite sides. A cigarette drain was used, immobilization was carried out, hand baths were abandoned, and dressings were changed infrequently. The tendons appeared to slough less often. The patient's stay in hospital was still as long and a stiff finger was still unavoidable, except for the fortunate few in whose case the diagnosis was made early.

When penicillin became available, I decided to try a local instillation combined with conservative incision. In the first case treatment commenced with 20,000 units given every three hours by intramuscular injection, and incision was later carried out. In the next two cases penicillin was given intramuscularly as well as locally. In the following three penicillin was given locally only. This made a total of six patients, and the last three did just as well as the first three. This was to be expected.

Apart from limiting cellulitis, sulphonamide therapy appears to have made little difference to the end results, so that in a comparatively avascular closed space it was not to be expected that the intramuscular administration of penicillin would influence the final result.

Method.

The arm is elevated and a sphygmomanometer armband is used to obtain a bloodless field. A lateral incision is made over one phalanx, and the obscuring fat is held aside with the skin by Allis forceps. An incision is made in the sheath and the pus is expressed. A fine rubber tube is then inserted into the sheath. There is little room for it, and though this is difficult, if the tube is sufficiently fine it can be made to enter the sheath at least far enough. A cotton stitch closes the skin and is carefully tied about the tube so that the friction of the cotton prevents the tube from coming out. The stitch is not so tight as to occlude the lumen. This procedure is repeated on the other phalanx, either on the same or on the opposite side. A dressing is placed so that the tube ends penetrate through it; a "Monacrin" pad is applied to this. A dorsal plaster slab is moulded to the back of the hand and forearm and the whole is bandaged. Penicillin, 0·5 millilitre, is then injected into each tube every three hours. It may be unnecessary to do this so frequently; but the treatment has not been tried in a sufficient number of cases to allow experiment with the time interval. Before the penicillin is injected the outer pad is removed with forceps. Penicillin is injected with every aseptic precaution. The "Monacrin" pad is reapplied and the part is bandaged. This treatment is continued for five days. I am in doubt as to whether the penicillin when injected runs out round the other tube, but probably it does so. After five days the treatment is stopped, the tubes are removed and active movements are commenced.

With regard to the strength of the penicillin solution, at first 1,000 units per millilitre were used. This concentration has now been reduced to 250 units per millilitre.

Results.

Except for one case, in which tendon sloughing had commenced from a mid-line wound prior to treatment, results varied from 50% recovery of movement (one case) to 100% recovery (one case). The length of stay in hospital varied from eight to ten days so far as the wounds were concerned. The wounds were all clean and healing when the tubes were removed.

The pus was not always bacteriologically examined and I have been fortunate in being faced on each occasion with a susceptible organism. Cultural examinations should, however, be made at the time the sheath is opened and the pus is available.

Addendum.

Since this article was written a method has been described of injecting the penicillin directly into the sheath by a needle. This method may actually prove superior.

Reports of Cases.

"DDT" POISONING IN MAN.

By I. M. Mackerras,
Lieutenant-Colonel, Australian Army Medical Corps,
AND
R. F. K. West,
Lieutenant-Colonel, Australian Army Medical Corps.

"DDT" (dichloro-diphenyl-trichlorethane) has come into great prominence during the war, and its use has revolutionized entomological control, especially mosquito control, in the same way that penicillin has revolutionized surgery. It has consequently been made the subject of intensive wartime research, and its toxicity to animals has been very thoroughly studied. However, the extensive "literature" on this subject is almost all contained in mimeographed reports with a restricted circulation.

The action of "DDT" is twofold—it has an acute effect on the nervous system, and a more chronic action on the liver similar to that produced by many other halogenated organic compounds. The conclusion reached by both British and American workers is that "DDT" is a poison, but quite safe to use as an insecticide at the dosages and by the methods developed, provided that normal precautions are taken. The greatest danger is considered to lie in absorption of oily solutions through unprotected skin.

In spite of extensive use for a period of over two years by many people, both in the laboratory and in the field, no instance of poisoning in man was observed until Wigglesworth (1945) described the case of a laboratory worker who had repeatedly immersed his unprotected hands and arms in acetone solutions of "DDT". He suffered from aching and heaviness of the limbs, and a feeling of nervous tension; some involuntary muscular tremors were observed. Symptoms persisted for ten weeks, and recovery was not complete within a year.

In view of the importance of the subject, and of the fact that that of Wigglesworth remains the only case so far known to us to have been described, it seems desirable to record some cases of poisoning that have occurred in New Guinea.

Poisoning by Ingestion.

A native cook-boy used "DDT" in mistake for baking powder to make a tart, which was eaten by some 25 army personnel. All suffered from a feeling of giddiness and weakness, commencing one to two and a half hours after the meal. Four vomited and two were admitted to a field ambulance. All recovered within forty-eight hours. The following clinical account of the two patients admitted to the ambulance has been prepared from the notes of Captain J. M. McDonald, who was in charge of them.

Case I.

Sergeant E. reported for medical attention at 11 p.m. on August 21, 1945. He stated that at 6.30 p.m. he had had his evening meal, which included a slice of jam tart. He had felt well until about 7.30 p.m., when (whilst playing bridge) he felt giddy, became confused and found he could not concentrate. The symptoms increased, but he continued to play cards until 9 p.m. Feeling he could play no longer, he stood up; his symptoms immediately became worse, his muscles felt weak, he had "pins and needles" in his hands and arms and he staggered to the door and collapsed. He heard a rushing noise in his ears, but otherwise hearing and vision were not affected. His speech seemed thick and blurred. He felt better when lying down. At 10.30 p.m. he commenced to vomit, and vomited four times in all. At no time did he have tremors or spasms of the limbs.

On his admission to hospital, he had to be carried to the ward because he felt giddy—"as if he had been on the grog"—and his muscles felt powerless. Routine examination of all systems revealed no abnormality. His pulse rate was 100 per minute and the pulse was regular. Slight epigastric tenderness was present. The vomitus was dark in colour, but contained no blood; no diarrhœa was present. A diagnosis of acute gastritis was made. The patient was given a dose of *Mistura Bismuthi Sedativa*, which he vomited. He was then given 0·25 grain of morphine hypodermically, and slept. Next morning when he awoke he felt well, and he was discharged from hospital on August 23.

Case II.

Sergeant P. was examined at the same time as Sergeant E. He also reported having eaten a slice of jam tart along with his evening meal. He had felt well until 9 p.m., when he felt dizzy, and this feeling became worse when he stood up. He complained of palpitation and of slight numbness in the hands only. He vomited four times. He had no abdominal pain and no tremor or muscular spasm. Physical examination revealed no abnormality. His treatment and progress were as in Case I.

Poisoning by Contact.

"DDT" is commonly used in the field as a 5% solution in "distillate" (a light diesel oil), and it is generally applied by dropper bottles of a capacity of about 0·5 to 1·0 pint, with an action like the sowing of seed. Normally, these bottles have a collar on the neck to protect the hand from contamination by the fluid.

Case III.

A malaria control duty man, grown careless, used an unprotected dropper bottle for some time (probably weeks), allowing his hands (mainly the right) to become covered with "DDT" solution on six days out of seven. He developed some swelling of the right hand, numbness, and a feeling of "pins and needles" and muscular weakness, which reached the shoulder in about a fortnight; by this time he could lift only the weight of his arm. During this period he suffered from severe, deep-seated headache, which was not relieved by aspirin. He vomited at night for about three days at the end of the fortnight, and on the last day his temperature was 101° F. There was no indication of liver involvement. He then "reported sick" and was put off duty. The swelling, numbness and headache disappeared in four days, but it was fourteen days before muscular power was restored to normal.

Captain F. W. Berrill, in whose malaria control unit this incident occurred, states that he has also suffered mildly from weakness of the hand and numbness as far as the elbow, that it is a most unpleasant sensation, and that the headache has a nauseating quality.

Case IV.

Captain B., while measuring "DDT", accidentally dropped the container into the bin, and the powder flew up in a cloud, some of it getting into his eyes. He suffered intense pain in the eyes for four days, requiring repeated injections of morphine and cocaine and castor oil eye drops; he was blind for a fortnight, and had extremely severe headache for the same period. Recovery was complete.

Discussion.

There is little room for doubt that these are genuine examples of "DDT" poisoning, and that the cardinal early signs are (i) numbness and weakness of the limbs, (ii) intractable headache, (iii) vomiting and giddiness if the dose has been sufficiently large. When "DDT" is absorbed through the skin, numbness and weakness seem to be restricted to the contaminated limb, which suggests that its action may be local, or that it may travel by way of nerve sheaths. Should other cases occur, a total and differential white cell count would be indicated, for Cameron (Porton unpublished reports) has shown that a neutrophile leucocytosis is an early sign of poisoning in animals.

The toxic dose is, of course, uncertain in these cases; but, from the small amount of baking powder needed in cooking and the relatively small proportion of the body contaminated with the oil solutions, it may be suggested that of mammals man is among the more sensitive to

"DDT" poisoning. Evidence of chronic poisoning has not been seen, and there is perhaps reason to hope that signs of acute toxicity will generally develop in time for absorption to be stopped before the later effects on the liver become apparent.

It is clear from these observations that any men showing numbness, weakness and headache should be immediately relieved of any duties involving handling of "DDT" until they have completely recovered. No other treatment, except symptomatic treatment, seems likely to be required. It follows, too, that all normal precautions in labelling, distributing and handling "DDT", especially in oily solutions, should be rigidly observed; but there is no reason to believe that it is more dangerous than many other insecticides in common use.

Acknowledgements.

We are indebted to Captain J. M. McDonald and Captain F. W. Berrill for much of the information reported in this paper. Our thanks are also due to the Director-General of Medical Services, Major-General S. R. Burston, for permission to publish this paper.

Bibliography.

V. B. Wigglesworth: "A Case of D.D.T. Poisoning in Man", *British Medical Journal*, Volume I, April 14, 1945, page 517.

A SHORT NOTE ON THE CHANGING OUTLOOK IN OSTEOMYELITIS BROUGHT ABOUT BY THE INTRODUCTION OF PENICILLIN.

By R. D. McKellar Hall, M.B., B.S. (Melbourne), F.R.C.S. (Edinburgh), F.R.A.C.S.,
Honorary Orthopædic Surgeon, Children's Hospital, Perth; Honorary Orthopædic Surgeon, Perth Hospital, Perth.

Since penicillin was first used in the treatment of acute osteomyelitis at the Children's Hospital, Perth, in May, 1944, there is no record of an operation having been performed or of chronic sequelæ having resulted from the disease. If acute osteomyelitis was the only condition for which penicillin had proved of value, the above experience alone would more than justify its therapeutic *début* and the amount of money expended in its production. Those of us who have had anything at all to do with the treatment of this distressing condition have in the past been only too acutely aware of the colossal amount of suffering, disability and economic wastage which it leaves in its wake.

The following case records are open to criticism, particularly in regard to diagnosis, which has often been based on clinical findings without radiological evidence of subsequent bone changes.

If the clinical diagnosis has been wrong in those cases in which no subsequent radiological changes have been found, the fact remains that the patients (five in number) who have shown radiological changes have all been cured with intramuscular injections of penicillin alone, and that in a period of twenty-four months no operation has been performed at the Children's Hospital in a case diagnosed as acute osteomyelitis. Hence no great diagnostic errors can have been committed, since the number so diagnosed is indeed small.

Let me commence with the story of the first case in which penicillin was used after the usual operative procedure.

Clinical Record.

A boy, aged eight and a half years, fell and hurt his left leg on May 19, 1944. The leg ached next day and gradually became worse, and he had had "no sleep" for three nights prior to his admission to hospital on May 23. His temperature was then 101° F., but rose later to 104° F. Exquisite tenderness was present over the lower half of the thigh. A blood count revealed that the leucocytes numbered 12,700 per cubic millimetre and that the hæmoglobin value was 64%.

At operation on May 24 the periosteum was incised and a free flow of thin fluid resulted; two holes were drilled in the femur. On May 26 the child complained of pain in the region of the right hip joint and the upper end of the right femur, with limitation of movement of the hip joint and tenderness. No pathogenic microorganisms were grown on attempted culture from the blood.

On May 29 penicillin treatment was commenced, 20,000 units being given every two hours for four doses, and thereafter every three hours (this became the routine dosage). On May 30 the hæmoglobin value was 52% and the erythrocytes numbered 4,450,000 per cubic millimetre and the leucocytes 23,800 per cubic millimetre. On June 1 the pain in the right hip had almost gone and the temperature was falling.

On June 3 the child had a secondary hæmorrhage; the wound was packed and a blood transfusion was given. On June 7 the packing was removed in the operating theatre under nitrous oxide anæsthesia, a space being left into which half the open hand would fit comfortably. There was practically no discharge, and the lining membrane of this cavity had the appearance of greyish pyogenic membrane. For some time I did not know how to deal with it; I had a feeling that this was a "laudable" membrane, and I decided to experiment by complete closure of the cavity after taking a swab from its depths. Closure was effected by several deep sutures, all layers being included. Culture from the swab yielded a few staphylococci, but the wound healed rapidly and cleanly without adhesion to bone, so that the limb now has a perfectly normal appearance, except for the scar of incision on the skin surface. An X-ray film on June 8 showed a punctate mottling of the lower quarter of the femur and a periosteal reaction up to the mid-shaft. On June 10 a second blood transfusion of 600 millilitres was given. On June 12 the hæmoglobin value was 76%, the erythrocytes numbered 5,460,000 per cubic millimetre, and the leucocytes numbered 10,400 per cubic millimetre. On July 14 the blood sedimentation rate was 50 millimetres at the end of one hour and 78 millimetres at the end of the second hour. On August 27 palpable thickening of the lower end of the femur was present. There was no pain, tenderness or disability.

Comment.

That was the last operation performed in the hospital for acute osteomyelitis, on May 24, 1944. So impressed was I with the remarkable result that I thought it must surely be unnecessary to operate at all, and so it has proved.

Table I shows briefly the main points in regard to all cases in which the diagnosis of osteomyelitis has been made since the foregoing incident.

There was neither rhyme nor reason for the number of units of penicillin injected, since I had no information for guidance. I was aware, however, of the importance of combating anæmia by means of blood transfusion, my attention having been drawn to American literature on the subject at a military hospital. There is no doubt in my mind that it is essential in order to obtain the most satisfactory results to have the blood hæmoglobin value as nearly at 100% as possible.

The foregoing records, I repeat, are open to criticism. In some cases I did not see the patient myself before penicillin had been given and clinical signs had improved; but the one outstanding fact remains that for the past sixteen months the Children's Hospital, Perth, has not had a case of acute osteomyelitis in which cure had not been effected by penicillin without operation or sequelæ. For comparison, during the twelve months from May, 1943, to June, 1944, ten cases of acute osteomyelitis were recorded, two following compound fractures, one following open reduction of a fracture, and seven blood borne. Of these patients, one died, two were completely cured, and seven were incompletely cured when last examined.

TABLE I.

Case Number.	Patient.	Age.	Site of Lesion.	Date of Admission.	Date of Discharge.	Units of Penicillin.	History.	Clinical Findings.	Leucocytes per Cubic Millimetre.	Hæmoglobin Value; Erythrocytes per Cubic Millimetre.	X-Ray Findings.	Remarks.
I	B.S.	Three years.	Right tibia, lower end.	26. 6.44	28. 7.44	1,325,000	Complained of sore foot previous day. Feverish in afternoon.	Temperature 104·4° F. Pain, tenderness, œdema, swelling, heat and redness, lower end of right tibia. Limitation of movement of ankle, with pain.	10,000 on 26.6.44 11,800 on 27.6.44	64% on 30.6.44 92% on 4.7.44	July 13 and 17, no abnormality detected, but faint periostitis evident; 4.8.44, confirmed; definite up to mid-shaft.	Last examined on 1.6.45. X-ray films (both limbs for comparison), thickening of cortex alone remains. No disability. Blood transfusion, three-quarters of a pint, on 30.6.44.
II	M.J.	Ten months.	Right radius, upper end.	1. 9.44	22. 9.44	915,000	Pain and swelling of upper portion of forearm noticed.	Temperature 102·6° F. Pain, swelling, heat, œdema, tenderness, apparently localized to head of radius.	19,200 on 4.9.44	71% on 4.9.44 61% on 8.9.44	No radiological evidence of osteomyelitis on 1.9.44, 5.10.44 or 1.6.45.	Transfusion of half a pint of blood given on 8.9.44. Temperature normal on tenth day (10.9.44).
III	C.O.	Twelve years.	Left fibula, lower end.	3. 9.44	29. 9.44	1,250,000	For two days swelling and pain in left ankle.	Temperature 101° F. Pain, swelling, redness, œdema and acute tenderness of inferior extremity of left fibula. Extremely ill, weakly native girl.	—	—	27.9.44, mottling of lower end of fibula. Periosteal reaction.	Large collection of fluid appeared over lower end of fibula, obvious pus. Advised "leave alone", but "restless resident" incised it on 11.9.44, obtaining only some thin, harmless-looking sanguineous pus. It was subsiding; 18.9.44, quite healed.
IV	J.A.	Four years eight months.	Right femur, upper end.	30.10.44	8.12.44	810,000	25.10.44, vomited. 26.10.44, dragged right leg. 27.10.44, feverish, pain in right thigh.	Temperature 104·6° F. Right hip flexed, tender upper aspect femur. 31.10.44, œdema in addition and referred pain to knee. 2.11.44, bilateral swelling of parotid glands. Temperature 104° F. Penicillin treatment commenced, 10,000 units every two hours for 24 hours, then every three hours by day, every four hours by night.	11,800 on 30.10.44 19,800 on 7.11.44 17,400 on 11.11.44 7,500 on 19.1.45	66%; 4,290,000 90%; 5,200,000 92%; 5,000,000	16.11.44, no abnormality. 6.12.44, disturbance of bone pattern in neck of femur. 5.1.45, Brodie's abscess in upper aspect of neck of femur. 1.6.45, still shows mottling in neck; Brodie's abscess disappeared.	It is interesting to note that the Brodie's abscess appeared and disappeared after the course of penicillin treatment had terminated.
V	C.E.	Ten years.	Right femur, lower end.	6.11.44	12. 2.45	1,040,000	Five days earlier twisted right knee at school sports. Unable to walk on it, painful on movement since.	Temperature 102° F. Knee swollen, hot, tender, held in 150°; tender medial side lower end of femur. 10.11.44, aspiration of knee joint. Attempted culture unsuccessful. Whole thigh swollen. Tenderness spreading.	8,800 on 7.11.44 25,000 on 9.11.44 18,800 on 14.11.44 8,100 on 9.2.45	76% on 5.1.45	6.11.44, no abnormality. 14.11.44, osteomyelitis lower fifth of femur. 22.2.45, rarefied areas. Recalcification.	Treated by sulphadiazine and weight extension. Penicillin treatment commenced on 10.11.44.
VI	N.P.	Twelve years.	Left cuboid.	19.11.44	1.12.44	530,000	On 17.11.44, fell down steps. Pain increasing. Kept him awake previous night.	Possibly cellulitis, but tenderness and pain suggestive of osteomyelitis. 19.11.44, woke crying with pain at 10.30 p.m.; 20.11.44, examined by me. Diagnosis of osteomyelitis of cuboid. Penicillin treatment started.	11,100 on 20.11.44 12,500 on 22.11.44	64% 84%	18.11.44, no abnormality. 1.6.45, some disturbance in ossification in antero-lateral angle of cuboid compared with right side. Almost completely disappeared by August.	Doubtful diagnosis, though supported by X-ray findings. On 27.11.44, no pain on movement. Slight tenderness over bases of outer four metatarsals.

TABLE I.—*Continued.*

Case Number.	Patient.	Age.	Site of Lesion.	Date of Admission.	Date of Discharge.	Units of Penicillin.	History.	Clinical Findings.	Leucocytes per Cubic Millimetre.	Hæmoglobin Value; Erythrocytes per Cubic Millimetre.	X-Ray Findings.	Remarks.
VII	C.D.L.	Two years eleven months.	Right femur, lower end.	2. 1.45	16. 2.45	500,000	About two weeks earlier began to limp. Improved, but condition recurred on 31.12.44.	Right knee swollen and hot; very tender, lower end of femur. 3.1.45, still hot, less tender.	—	—	2.1.45, some thickening of periarticular tissues of knee and irregularity of medial side of femoral epiphysis, not necessarily abnormal. 8.2.45, possible trace of ossification in raised periosteum posteriorly compared with left femur. 1.6.45, no change.	Diagnosis doubtful. Last examined on 1.6.45, no disability. Temperature 99·4° F. on admission to hospital, 100·2° F. for three days, 99·6° F. for three days, then up to 102°, 100·8°, 99·4° F.
VIII	G.M.	Two years.	Left fibula, lower end.	16. 1.45	14. 2.45	700,000	About one week earlier, soreness of left ankle; noticed swollen and red.	Temperature 100·4° F., swelling and œdema, redness, heat and tenderness left lateral malleolus.	13,200 on 16.1.45 10,200 on 5.2.45	—	19.1.45, slight rarefaction three-quarters of an inch above epiphyseal line. 1.9.45, no abnormality detected.	Penicillin treatment commenced on admission to hospital. Immobilization in plaster of Paris.
IX	G.F.	Six years.	Left femur, lower end.	30. 1.45	16. 3.45	600,000	Sore left knee four days. Fell over when playing. Referred by own doctor for incision.	Temperature 100° F. Brawny swelling, inner side knee. Mantoux test 1/10,000 positive result. Blood sedimentation rate, 1.2.45, 122 millimetres in one hour. 26.2.45, four millimetres in one hour. No organisms found in a smear, but two colonies grown in culture (possibly due to contamination).	12,100 on 1.2.45	Erythrocytes, 4,580,000	1.2.45, no abnormality except swelling of soft tissues in both anteroposterior and lateral views round lower third of femur. 1.6.45, no abnormality except some central rarefaction in anteroposterior view in lower quarter of femoral shaft.	Diagnosis of osteomyelitis doubtful.
X	M.W.	Twelve years.	Right hip, arthritis.	6. 3.45	29. 3.45	1,000,000	Pain right leg week earlier; limping; worse day before admission.	Temperature 102° F. Right leg extremely tender. Cannot bear any movement.	22,100 on 6.3.45 16,100 on 21.3.45	Hæmoglobin, 15 grammes *per centum* on 12.3.45	6.3.45, no abnormality detected.	Has not been seen since.

Acknowledgement.

I wish to express my thanks to Dr. A. R. Edmonds, medical superintendent of the Children's Hospital, Perth, for help in the preparation of the statistical details in the table.

Addendum.

The following case of extreme interest was overlooked in the compilation of the foregoing notes.

Clinical Record.

A boy, aged twelve years, was admitted to the Children's Hospital on June 11, 1945. He had had a stye ten days previously. A few days later his upper lip became sore and swollen; two days before his admission to hospital he squeezed it.

On his admission to hospital, gross cellulitis of the upper lip was present. His temperature was 103·8° F. Penicillin therapy was begun immediately. Next day the boy had a typical scarlatiniform rash; he was transferred to the Infectious Diseases Hospital as suffering from scarlet fever. His temperature dropped, so for three days no further penicillin was administered; but then his temperature rose again, so penicillin was once more administered from June 15, until June 20, when the boy was again admitted to the Children's Hospital. His temperature swayed up to 101° F. every day, and the upper end of the right tibia was painful, tender and swollen.

On the boy's readmission to the Children's Hospital, his condition was diagnosed as acute osteomyelitis of the head of the right tibia. Attempted culture of microorganisms from the blood was unsuccessful. A blood examination revealed that the hæmoglobin value was 13·5 grammes *per centum,* and that the leucocytes numbered 10,900 per cubic millimetre. Penicillin treatment was again given, and his temperature gradually subsided. He was discharged from hospital, apparently cured, on July 3, 1945. The total amount of penicillin given was 540,000 units at the Infectious Diseases Hospital and 1,100,000 units at the Children's Hospital.

On July 20 the child was again examined in the orthopædic clinic; the upper end of the tibia was painful, hot and swollen, although his temperature was normal. The leucocytes numbered 20,000 per cubic millimetre. An X-ray film taken on that day revealed mottling of the upper end of the tibia with periosteal reaction suggesting active infection. The child was readmitted to hospital on July 22, still with a normal temperature, and operation was performed on July 23. The upper half of the tibia was thoroughly gutted out, and about one ounce of thick pus was obtained; this yielded a growth of hæmolytic *Staphylococcus aureus* on culture. The same evening a transfusion of 500 millilitres of blood was given. A course of 1,000,000 units of penicillin was commenced on the day of the child's readmission to hospital, and penicillin was also injected locally twice a day for five or six days through a tube inserted at the time of operation. The wound was sutured at operation; it healed by first intention, and the child was discharged from hospital on August 14, apparently cured. After operation his temperature was elevated to 101° F. for three days.

Comment.

The interesting feature about this case, which is the only one in which penicillin was given and operation was performed also, is that the osteomyelitis followed the administration of approximately 50,000 units of penicillin given on the day of the child's admission to hospital, June 11. Presumably this dose was not sufficient to cure the septicæmic state.

◆

POST-ABORTIONAL TETANUS WITH RECOVERY.

By JEAN HUTCHINGS and ALICE WHEILDON,
Resident Medical Officers, Queen Victoria Memorial Hospital for Women and Children, Melbourne.

IN 1941 Weinstein and Beacham reviewed 170 reported cases of post-abortional tetanus, and came to the conclusion that although the incidence of the disease was low, the mortality rate was high, averaging 84%. Most cases followed criminal abortion, and the incubation period was six to twelve days. Weinstein and Beacham commented on the paucity of case reports in the English and American journals. For this reason it was thought that a description of this case might be of some value.

Clinical Record.

Mrs. A.C., aged twenty-seven years, was admitted to the Queen Victoria Hospital on December 3, 1943. She had two children, the younger being six months old. Five days before her admission to hospital, having had amenorrhœa for two months, she syringed herself with a solution of antiseptic soap and procured the abortion of a fœtus, the abortion being attended by considerable hæmorrhage. On the morning of the fifth day after the interference she awoke with a stiff neck and jaw, and noticed that she could not yawn properly. By breakfast time she was unable to open her mouth to eat. The stiffness gradually became painful and more severe during the course of the day, and she was admitted to hospital at 10 p.m.

Inspection revealed a pale, anxious-looking woman with a pronounced *risus sardonicus*. She was unable to turn her head or open her mouth. Her eyebrows were raised and her eyelids half-closed and twitching. The sternomastoid muscles were standing out like cords, and extreme stiffness and pain were present in the neck, made worse by movement. The abdomen was not rigid. Examination of heart and lungs revealed no abnormality. The blood pressure was 180 millimetres of mercury, systolic, and 90 millimetres, diastolic. The uterus was enlarged to the size of an eight weeks pregnancy. No pelvic tenderness was present, and the lochia were not offensive. The temperature was 99·4° F., the pulse rate was 104 per minute, and the respirations numbered 22 per minute. The hæmoglobin value the following day was 53% (Neoplan).

Treatment was instituted five days after the introduction of infection, and fourteen hours after the onset of symptoms. An intradermal skin test with tetanus antiserum was performed with negative result. Intracervical smears and material for cultural examination were taken. Sedation was commenced with paraldehyde, six drachms being given rectally; 100,000 international units of tetanus antiserum were administered intravenously in 300 millilitres of normal saline solution at the rate of thirty drops a minute, the infusion taking seventy-five minutes. There was no reaction. During this period the intracervical smears were stained, and organisms with terminal spores resembling *Clostridium tetani* were seen; large Gram-positive bacilli resembling *Clostridium welchii* were also present. The bacteriological diagnosis of tetanus was later confirmed by cultural methods. When the administration of serum was completed, curettage was performed under light ether anæsthesia, and a large amount of clean-looking placental tissue was removed. Thereafter treatment resolved itself into prevention of spasms by adequate sedation, specific treatment with antitoxin, the prevention of bronchopneumonia, and the maintenance of adequate nutrition. The details of treatment will be discussed later.

The temperature ranged between 99° and 102° F. for the first ten days, and over the next two weeks rose in the evenings to 99° or 100° F. The pulse rate averaged 120 per minute over the first two weeks, declining gradually to 90 in the fourth week of the illness. Skin actions were frequent and profuse. Incontinence of urine was present for over a week. The bowels were not open spontaneously, and distension appeared on the second day, but this was relieved by a bowel washout.

Severe spasms of the facial and shoulder muscles occurred four hours after the patient's admission to hospital, and true opisthotonic spasms were observed during the following night. On the third day pronounced abdominal rigidity was also present, and any interference produced spasms. During the following night too little sedative was given, and severe spasms occurred, with extreme opisthotonus and generalized rigidity, in which the patient screamed with pain. Thereafter sedation was increased; "Sodium Amytal" was used almost exclusively, and it appeared effective in preventing severe spasms, though minor spasms occurred on any stimulus. The most severe spasms occurred on the fifth day of the patient's illness, and were accompanied by cyanosis. The dosage of "Sodium Amytal" required at this stage was 0·6 gramme every four hours. After the fifth day the spasms gradually became less severe, though generalized rigidity persisted, and up to the eleventh day the patient was liable to sudden facial spasms, in which she bit her tongue severely. The intense pain caused by this seemed to initiate a generalized spasm, in which she became cyanosed, with stertorous respirations and a pulse rate of 160 to 180 per minute. By the eleventh day rigidity was passing off, in the reverse order in which it had affected the muscles. On the fifteenth day she was able to turn her head slightly, though she was still subject to severe facial spasms. On the seventeenth day she still had considerable trismus and stiffness of the neck and shoulder muscles. Some abdominal rigidity was still present, but she was able to move her arms and legs. By the twenty-second day she was able to open her mouth about three-quarters of an inch and was generally more relaxed. She said that whenever anyone spoke to her or touched her she could feel her whole body stiffening. By the twenty-fourth day she was able to hold a cup and drink from it, and her neck stiffness had disappeared. She still had the twitching of the eyelids which was noticed on her admission to hospital. Thirty-four days after the onset she had completely recovered, and a few days later she was allowed to sit out of bed. She was discharged from hospital on January 19, 1944, forty-seven days after her admission.

Details of Treatment.

General Management.

The patient was nursed in a single room, which was kept darkened. Special nurses were in constant attendance upon her, and their care and skill contributed greatly to her recovery.

Prevention of Spasms.

For the prevention of spasms by sedation, a drug was sought which would have a maximal antispasmodic effect with a minimal narcotic effect, which would not unduly depress the respirations, and which had a wide margin of safety. "Sodium Amytal" seemed to meet these requirements more adequately than any other drugs used at the present time. It may be given intramuscularly or rectally. In the case under discussion the intramuscular route was used exclusively. It was found that the drug acted in five to ten minutes, and injections were necessary every four hours. A small dose was used at first (0·25 gramme), but this was rapidly increased up to 0·6 gramme, which appeared to produce the required depth of sedation. "Sodium Amytal" appeared to have an excellent effect in allaying the fear and spasm, and in producing a light sleep from which the patient could easily be roused for feeding or other nursing treatment. The greatest amounts were given on the fifth and sixth days, 3·6 grammes being given over the twenty-four hours. Spasms recurred if the effects of the drug were allowed to wear off, but a further injection produced relaxation within a few minutes. It was not found necessary to use the drug intravenously, though the means for doing so were kept constantly in readiness.

Other drugs were employed because sufficient quantities of "Sodium Amytal" were not available at this time. "Avertin" was not used because of its small margin of safety, and because its narcotic effect was considered too great in proportion to its antispasmodic effect. Paraldehyde in doses of two to four drachms was employed with good effect, but its narcotic effect was greater in proportion to its antispasmodic effect than was the case with "Sodium Amytal". The oral route was tried first, but was abandoned in favour of the rectal route, since administration of the drug by mouth caused coughing and initiated a severe spasm. Morphine and hyoscine were used in conjunction and were found to be particularly useful during the period of serum reaction when severe pains were distressing the patient. The dosage used was one-sixth of a grain of morphine and one one-hundredth of a grain of hyoscine. "Sodium Luminal" given intramuscularly was tried, but was found to be disappointing, being much slower in action than "Sodium Amytal" and less effective in allying spasm.

Antitoxin.

The initial dose of antitoxin was 100,000 international units intravenously. Thereafter 20,000 units were given intramuscularly each day up to a total dosage of 200,000 units. A serum reaction was observed, consisting of severe headache and muscle pains and a mild urticarial rash from the eighth to the twelfth day.

Prevention of Bronchopneumonia.

A study of the reported cases leads one to the conclusion that bronchopneumonia is the immediate cause of death in fully half the cases, owing to deep sedation and inability to cough and expectorate mucus. Consequently strenuous efforts were made to prevent it, the following methods being employed.

1. The patient was nursed flat in bed with the foot of the bed raised. Her position was changed frequently, so that she lay on her back, on either side or on her face. At intervals she was placed so that her head and shoulders hung down over the head of the bed; in this position mucus poured from her nose and mouth. This was usually done just before a sedative was administered, so that the patient could make some attempt to cough and expectorate.

2. Drainage was employed at the same time in the form of a rubber catheter to a suction apparatus through which mucus could be removed from the mouth and pharynx. The use of atropine was avoided, owing to its action in increasing the viscosity of secretions.

3. "Carbogen" was administered regularly to counteract the respiratory depression produced by sedation.

4. Inhalations of *Tinctura Benzoini Composita* with menthol were given in a further attempt to liquefy the secretions.

5. Throat swabbings were taken from all attendants, with the object of excluding those harbouring hæmolytic streptococci.

6. Oral sepsis was prevented by frequent and careful mouth irrigation.

7. Care was taken with feedings. Gaps between the teeth permitted the introduction of food, and swallowing, though difficult for the patient, was never impossible; choking occurred only if attempts were made to administer fluids which tasted unpleasant.

8. Chemotherapy was instituted on the sixth day, when signs were observed of diminished air entry at the base of the right lung and scattered rhonchi in the chest. Sulphathiazole was employed, the initial dose of two grammes being followed by one gramme every four hours up to a total dosage of 21 grammes over the next six days. Frank signs of bronchopneumonia did not develop at any stage.

Maintenance of Nutrition and Hydration.

Feedings were given every four hours; they consisted mainly of milk drinks containing "Aktavite" or "Benger's Food", egg flips, junket, orange juice with glucose, and broth with "Marmite" added. The daily fluid intake averaged two to four pints. During the first few days swallowing was difficult and water was given for forty-eight hours by the continuous rectal drip method. On the second day attempts were made to pass a Rehfuss tube, but without success, and as the attempts initiated spasms they were abandoned. Ferrous sulphate (thirty grains), thiamin hydrochloride (two milligrammes) and "Adexolin" (thirty minims) were given orally from the sixth day.

Discussion.

There is considerable divergence of opinion in the literature as to both the optimum dosage of antitoxin and the routes to be adopted. Vener and Bower, who report a mortality rate of 29% in 100 cases of surgical tetanus, advocate the administration of 200,000 units by various routes over the first thirty-six hours. They prefer the intrathecal route, using cisternal puncture; but this is still condemned by most writers on the subject. Spaeth analysed 276 cases of tetanus, and his conclusions were that a total dosage of 60,000 American units (120,000 international units) was sufficient, and that the intrathecal route was better avoided. Serum is of doubtful value in a fully developed case, but it is of value in early cases, and should always be given before local treatment is undertaken.

Local Treatment.

Writers on surgical tetanus are mostly in favour of a fairly rigorous treatment of the wound once adequate doses of tetanus antiserum have been given. Spaeth states that the treatment of the wound should follow the same surgical principles as that employed in the absence of tetanus. In spite of this, Weinstein and Beacham, in a review of 170 collected cases of post-abortional tetanus, state that "in post-abortal tetanus dilatation and curettage are generally and correctly condemned". They give no reasons for this statement. While curettage cannot be expected to remove the organisms which have already invaded the uterus, it will reduce the danger of hæmorrhage and secondary infection, and given adequate amounts of circulating antitoxin there should be no danger from such a procedure.

Conclusions.

1. A severe case of post-abortional tetanus is described, in which the incubation period was five days, the period of onset sixteen hours, and the duration of clinical symptoms and signs of tetanus thirty days.

2. The advantage of curettage after adequate treatment with antitoxin is discussed.

3. "Sodium Amytal" appears to be an effective agent for the control of spasms.

4. Postural treatment is an important factor in the prevention of bronchopneumonia.

Acknowledgements.

We are indebted to Dr. Winifred Kennan for permission to publish this case. We also wish to express our thanks to the Fourth American General Hospital for supplies of "Sodium Amytal" when the existing stocks became depleted.

Bibliography.

R. Spaeth: "Therapy of Tetanus: A Study of 276 Cases", *Archives of Internal Medicine*, Volume LXVIII, December, 1941, page 1133.

H. I. Vener and A. G. Bower: "Mortality in Clinical Tetanus", *The Journal of the American Medical Association*, Volume CXVI, 1941, page 1627.

W. L. Bush: "Tetanus following Induced Abortion", *The Journal of the American Medical Association*, Volume CXVI, 1941, page 2750.

B. B. Weinstein and W. D. Beacham: "Post Abortal Tetanus", *The American Journal of Obstetrics and Gynecology*, Volume XLII, December, 1941, page 1031.

C. R. Thomas: "Puerperal Tetanus", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume L, June, 1943, page 196.

A. T. Duncan: "Puerperal Tetanus", *British Medical Journal*, Volume II, 1942, page 426.

E. C. Edwards: "Puerperal Tetanus", *British Medical Journal*, Volume I, 1943, page 382.

A CASE OF GUNSHOT WOUND OF THE LARGE AND SMALL INTESTINES.

By D. R. Leslie,
Major, Australian Army Medical Corps.

(From an Australian General Hospital.)

The following case is thought to present some features of interest.

Clinical Record.

Private J.P., aged twenty-four years, was wounded by a sniper's bullet soon after the landing at Labuan Island on June 10, 1945. He was brought back to the beach and carried by landing craft to an Australian landing ship. Aboard this ship he was operated on by an army surgical team, and during the next four days he was taken to an Australian general hospital at Morotai. Here he was treated until September 26, when he was evacuated to Australia by hospital ship. At the time when he was wounded three of Private P.'s friends were killed in attempts to rescue him under fire.

On his arrival aboard the landing ship, four hours after he had been wounded, the patient was suffering from shock and was found to have two large jagged wounds in the lower part of the abdomen, both bleeding freely. The wound of entry was just lateral to the left anterior superior iliac spine, shattered fragments of which were visible. The exit wound was through the left rectus muscle, and through it were prolapsed two loops of small bowel.

A continuous transfusion of stored blood was started and operation was begun four and a half hours after receipt of the wound. Before operation the patient was given injections of gas-gangrene antitoxin (10,000 units), tetanus antitoxin (1,500 units) and penicillin (50,000 units). A few ounces of clear urine were obtained by catheterization, and digital examination of the rectum failed to detect any blood. An aspiration tube was passed into the stomach, and through this the stomach was kept empty by intermittent suction.

Under ether anæsthesia induced by the "open" method, rapid exposure was gained by joining entry and exit wounds, which were at about the same horizontal level. Brisk hæmorrhage from the iliac fossa was temporarily controlled by packing, and the peritoneal cavity was explored and found to contain blood and fæces. The small bowel was examined throughout its length and found to have four perforations. One of these was only half an inch across, but the other three were almost complete circumferential tears; in each case a small bridge remained intact at the mesenteric border. The peritoneum on the anterior wall of the sigmoid colon had been split, but the underlying muscular coat was intact. The transverse colon was found to be completely severed, a tear running back three inches into the mesocolon. No other visceral damage was detected.

The tears in the small bowel were repaired with double layers of continuous sutures. Hæmostasis was secured in the torn mesocolon, and the edges of the tear were approximated by sutures. A broad spur four inches long was then formed between the two open ends of the transverse colon by a double row of sutures, and this part of the bowel was brought out through the medial part of the incision as a "double-barrelled" colostomy. Time was not wasted in making a separate incision for this purpose, as by now the patient's condition was causing concern. The peritoneum was closed around the colostomy without drainage, and then the iliac fossa was explored. The innominate bone had been shattered in its anterior part, and some damaged iliacus muscle had to be excised. There was considerable hæmorrhage from deep in the iliac fossa, possibly from the bone in the region of its nutrient artery. The patient's condition did not allow either identification of the bleeding point or exposure and ligation of the internal iliac artery, so a pack was placed in the iliac fossa extraperitoneally and brought out through the lateral end of the wound. The remainder of the wound was then closed in layers around the colostomy, some difficulty being experienced in closing the damaged muscle layer.

For the next six days a state of paralytic ileus persisted, and the bowel was kept empty through an indwelling duodenal tube, at first by intermittent aspiration and later by an improvised Wangensteen continuous suction apparatus. Glucose (5%) in Ringer's solution was given by the continuous intravenous drip method and supplemented by intramuscular infusions of normal saline solution in an attempt to keep a positive fluid balance of three litres per day. Quinine was given intravenously, 10 grains per day, in place of the normal suppressive oral dose of "Atebrin". Sulphadiazine was given intravenously over the first four days to a total of 33 grammes. The urine was kept alkaline by administration through the intravenous drip apparatus of the sodium citrate solution supplied for use in the collection of blood for transfusion. For the first three weeks penicillin was given by intermittent intramuscular injections of 15,000 units every three hours. Fresh and stored blood was given to a total of four and a half litres.

On the seventh day flatus was passed through the colostomy, and on the eighth day the colostomy commenced acting well. The hæmoglobin value was then 9·6 grammes per 100 millilitres, and a further two litres of stored blood were given. The following day an attempt was made to add pooled human serum to the fluid given by intravenous drip, but this immediately produced a rigor. A further 1,400 millilitres of fresh blood were given the next day, but a second attempt to give wet serum had to be abandoned because of immediate venous spasm.

On the twelfth day the patient was commencing to take food by mouth, and the duodenal tube was removed and all intravenous therapy ceased. At this stage the lateral half of the wound was infected and had broken down widely, exposing the abdominal muscles and the innominate bone, which were constantly covered in fæces. This process had started at the site of the pack in the iliac fossa; there had been some discharge from the wound there ever since the pack was removed on the third day. Considerable tenderness was present over the anterior third of the bone, and the temperature rose in the evenings to 102° F.; The leucocytes numbered 18,000 per cubic millimetre of blood. On the sixteenth day, under "Pentothal" anæsthesia, a large loose fragment of the bone was removed, and an enterotome was applied to the colostomy spur to a depth of three and a half inches. The spur had been successfully crushed through four days later, with consequent deviation of some of the fæcal flow to the anus. After this procedure and the oral administration of sulphaguanidine the wound infection gradually diminshed.

On the seventeenth and eighteenth days copious melena occurred, necessitating a further transfusion of two litres of stored blood. This was attributed to a secondary hæmorrhage from the suture lines in the small bowel.

Post-Operative Course and Complications.

For the next week or two all went well, and the patient rapidly gained in weight. This happy state of affairs lasted until the thirtieth day, when he complained of colicky abdominal pain and commenced vomiting. His colostomy ceased to act, and he presented the clinical picture of acute small bowel obstruction. It was considered that this was probably produced by diffuse fibrinous adhesions, and it was decided to adopt conservative

GLOBIN INSULIN

(with Zinc)

'WELLCOME' brand

GLOBIN INSULIN (WITH ZINC) 'WELLCOME'
5 c.c.
40 UNITS PER C.C.
TO BE STORED IN A COOL PLACE
80 UNITS PER C.C.

AN IMPORTANT ADVANCE IN DIABETIC CONTROL

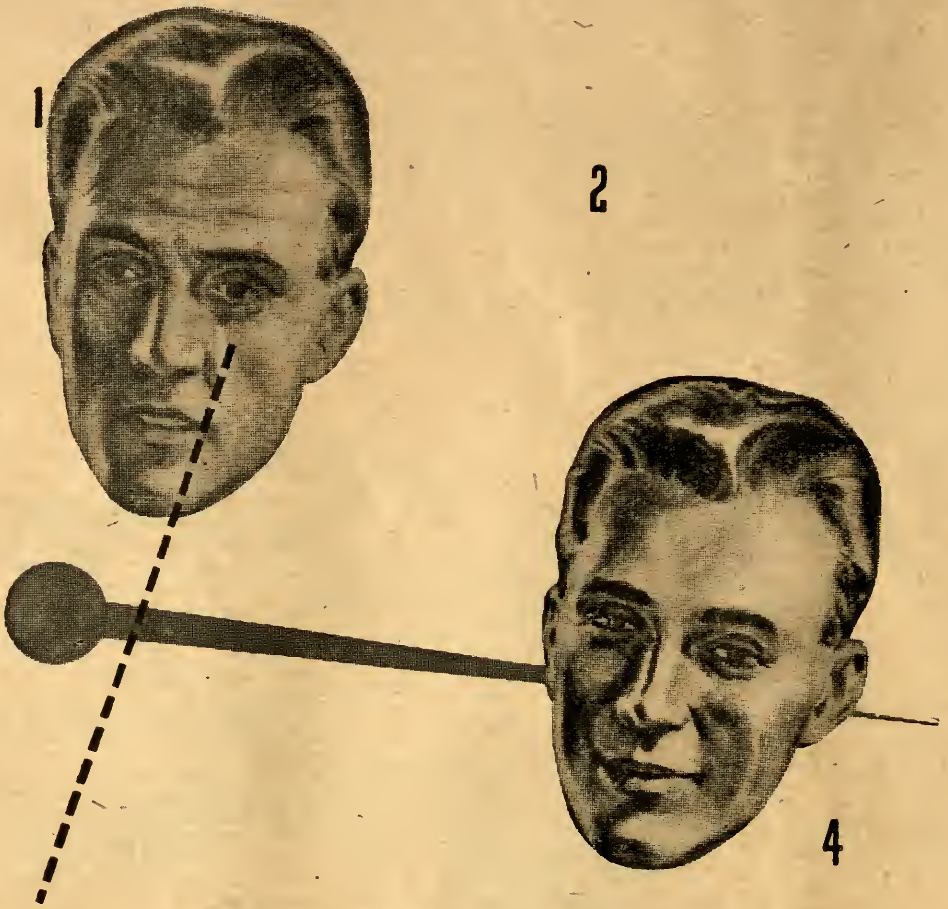
Globin Insulin (with Zinc), 'Wellcome' brand, represents an important advance in diabetic control. It possesses a new type of insulin action with the following characteristics:—

1. Onset of action is rapid and usually begins within two hours after injection.
2. A strong, prolonged daytime effect with maximum intensity during the patient's waking hours.
3. Diminishing action at night beginning at about the sixteenth hour after injection minimises the possibility of nocturnal insulin reactions.

Globin Insulin (with Zinc), 'Wellcome' brand, meets the needs of a large proportion of patients. A single daily injection controls many cases of moderately severe and severe diabetes. Globin Insulin (with Zinc), 'Wellcome' brand, is a clear solution and is comparable to regular insulin in its freedom from causing allergic reactions. Available in two strengths, 40 Units per c.c., 5 c.c. phials, 80 Units per c.c., 5 c.c. phials.

BURROUGHS WELLCOME & CO. (AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

ASSOCIATED HOUSES: LONDON NEW YORK MONTREAL CAPETOWN BOMBAY SHANGHAI BUENOS AIRES



Prompt Relief from Pain IN PEPTIC ULCER

Prompt and sustained relief from the pain of peptic ulcer is one of the striking features of medication with Amphojel (Colloidal Aluminium Hydroxide Gel-Wyeth). The medication of choice in peptic ulcer.

AMPHOJEL
Colloidal Aluminium Hydroxide Gel

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

SHAKE WELL
AMPHOJEL
WYETH'S
ALUMINA GEL

Striking features of medication with Amphojel:

- **PROMPT RELIEF FROM PAIN**
- **Rapid healing of ulcer**
- **Superior weight gain during treatment**
- **Fewer recurrences**
- **No alkalosis; no secondary acid rise**

A11M

measures in order to give these a chance either to resolve or to progress to the formation of localized bands more amenable to effective operative treatment. Accordingly, a duodenal tube was again passed and connected to a Wangensteen continuous suction apparatus, and all nourishment by mouth was discontinued. Fluids were adminstered parenterally in an attempt to keep the positive fluid balance as near as possible to three litres a day. Later this became rather difficult, owing to shortage of veins, and the intravenous administration of glucose and saline solution was supplemented by the intramuscular and rectal administration of saline solution.

From time to time the aspiration apparatus was clamped off, but the persistence of the obstruction was demonstrated by the rapid recurrence of pain, distension and vomiting of fæculent material. In the hope that it might produce better local relief of the affected bowel, a Miller-Abbott double-lumen tube was passed on the evening of the forty-second day. This passed well down the small bowel, and had the six foot mark by the forty-fourth day. At this stage, however, pain, distension and vomiting recurred, although suction was continued and the lumen of the tube was demonstrated to be patent. It was thought that these symptoms might be due to pylorospasm, and atropine was given in large doses without relief. The tube was then slowly withdrawn, aspiration being continued. When the tube had been withdrawn to the three foot six inches mark, a sudden and profuse drainage of fæculent material occurred, with immediate relief of symptoms. The tube was then withdrawn to the duodenum and thereafter used as a duodenal tube. It is assumed that part of the matted bowel must have become obstructed around the tube after the tip had successfully passed the obstruction in this loop.[1]

On the forty-seventh day aspiration was again stopped and obstruction found to be still present. Small bowel obstruction had now been present for seventeen days. The patient was in fair general condition, but had lost a great deal of weight, and only one more subcutaneous vein could be found for transfusions. His pulse rate was 84 per minute and temperature 98·4° F. His tongue was moist, although records showed that his fluid balance had been poor for several days. The hæmoglobin value of his blood was 12·8 grammes per 100 millilitres, and the leucocytes numbered 8,600 per cubic millimetre. His abdomen was not distended; some tenderness was present below the colostomy; no peristalsis was audible. Digital examination of the colostomy revealed no local obstruction of the large bowel; rectal examination revealed no abnormality. It was decided that conservative measures were no longer safe, and that operation was indicated. This was performed on the following day.

Under cyclopropane anæsthesia the abdomen was explored through a right paraumbilical incision. The coils of the upper two or three feet of jejunum were found distended and diffusely adherent to one another and to the adjacent viscera. Most of the affected bowel lay in the left side of the abdomen, and one loop was fairly firmly adherent to the splenic flexure of the colon. All adhesions were separated by blunt dissection, some with difficulty. There were no discrete bands, and no evidence of constriction at the original sites of suture in the small bowel. The abdomen was then closed.

Aspiration was continued for another two days and the tube was then withdrawn because of troublesome stomatitis. The colostomy acted well on the fifty-first day—that is, twenty-one days after the onset of small bowel obstruction and four days after laparotomy. Thereafter the patient ate well and rapidly gained in weight. A hæmatoma developed under the lower end of the laparotomy scar six days after operation, and this was responsible for a belated course of vitamin *K* injections.

From now on fæces were occasionally passed rectally, but the colostomy showed no signs of closing and the greater part of fæces and flatus continued to pass through it. The lateral part of the original wound was clean but still unhealed, and bare bone was still visible in it.

On September 13, ninety-six days after the patient had received the wound, under nitrous oxide and ether anæsthesia, the colostomy was dissected out of the scar tissue extraperitoneally and closed. The abdominal muscles were with difficulty closed over the colostomy, and the skin was sutured over these and over the hitherto exposed innominate bone.

The patient's bowels commenced to open normally two days later. The wound healed well, except for a little discharge at the lateral end for a few days.

On September 26, the patient was evacuated to Australia by hospital ship. When heard from three months later he was symptomless, his wound was well healed, and he was able to go about perfectly normally.

Discussion.

It is a welcome break from the routine conditions of war surgery for the surgeon who does the initial operation in such a case to have the patient under his care until recovery is practically complete.

The fairly large wounds of the bowel from a single small projectile were no doubt due to the fact that the bullet fractured the innominate bone on its way into the abdomen, thus producing a disruptive effect on the soft tissues similar to that seen in gunshot wounds of the limb bones.

In the tropics, where fluid and salt are lost in the sweat in large quantities, it is difficult to maintain an adequate parenteral fluid intake for more than a fortnight, particularly when allowance is made for venous thrombosis from quinine injections. At the time of the second operation only one vein remained for transfusion, and these considerations helped in the decision to abandon conservative treatment at that stage.

It was always impossible to give this patient intravenously either wet pooled human serum or reconstituted dry plasma. Every attempt to do so produced immediate rigors or local venous spasm and thrombosis. Whole blood, however, whether fresh or stored, was always well tolerated. As a result of this difficulty, it is surprising that his serum protein content, which was 6·7 grammes per 100 millilitres on July 8, had fallen only to 6·5 grammes per 100 millilitres on July 30. The only protein he had received in this period was that contained in one litre of stored blood. He lost considerable weight in this time, and no doubt his serum protein level was maintained at the expense of his tissue proteins. It is regretted that amino-acid preparations for intravenous use were not available.

In intestinal obstruction from diffuse adhesions a Miller-Abbott tube has little advantage over a simple duodenal tube, and this case demonstrated a real disadvantage—that is, that the tip of the tube can pass through part of the obstructed bowel, which then closes once more behind it. This strengthens the belief that the best form of intestinal drainage in most cases is a four-foot length of plain rubber tubing, of an external diameter of three-sixteenths of an inch, with a few lateral holes punched near the end, and unweighted. Such a tube can be easily passed to the stomach or duodenum by the nostril. The absence of a weight allows the end to be left open, and the resulting straight channel through the tip avoids many blockages.

Summary.

A case has been described of gunshot wound of the abdomen traversing the innominate bone, severing the transverse colon and producing multiple lacerations of the small bowel. The patient survived several complications, including delayed intestinal obstruction, and progressed to apparently complete recovery. Some aspects of the case have been briefly discussed.

Acknowledgements.

Successful treatment in such a case is impossible without skilful and devoted nursing such as this patient received. Thanks are due to Lieutenant-Colonel Alan Lendon for his advice in the later stages of the case, and to the Director-General of Medical Services, Australian Military Forces, for permission to publish this case report.

---

[1] These observations were confirmed by X-ray examination.

Reviews.

A TEXTBOOK OF MEDICINE.

IN his introduction to the seventh edition[1] of his "Textbook of Medicine", Dr. J. J. Conybeare refers to the great demand for books, including medical books, as one of the surprising features of the war. Commenting on the fact that this edition is the fourth to be published since 1939, the author states that the number of copies sold since the war began more than equals the total number printed in the previous ten years. While this is, of course, a tribute to an excellent textbook, it is at the same time a very gratifying indication of the determination of large numbers of medical men serving in the forces to keep themselves abreast of medical knowledge in spite of their temporary separation from centres of medical learning.

The present volume is in the main a reprint of the sixth edition, though a limited portion has been rewritten, notably the article on pulmonary tuberculosis and a few of the sections grouped under respiratory, cardio-vascular and renal disorders. There are new articles on sarcoidosis and *periarteritis nodosa* which, when we consider the limits of space available, are quite satisfactory. It is, we think, a pity that in a textbook published in 1945 only the briefest general reference is made to penicillin, though the author expressly states that it was thought best, in view of the rapid progress in its use, to omit any detailed description of this form of chemotherapy. Unfortunately that decision compels the reader to seek elsewhere than in his textbook for information not only about how to administer an officially recognized remedy, but also as to when its administration is indicated. Certainly by the time the edition went to press sufficient evidence was available to justify at least a cautious modification of the statement appearing under the treatment of bacterial endocarditis: "No form of treatment appears to have any beneficial effect."

Another item of recent knowledge that we think might well have been included in a textbook being brought up to date is a reference in the section dealing with "Infectious Diseases" to the various congenital defects in infants that have been attributed to their mothers' having contracted rubella in the early months of pregnancy.

We regret that the practitioner who elects to give his malarial patient quinine by the intramuscular route is still advised to administer eight to ten grains of quinine dissolved in two to four millilitres of water, as so concentrated a solution must almost inevitably lead to necrosis of the muscle.

PAIN IN CHILDBIRTH.

THE second edition of Lull and Hingson's "Control of Pain in Childbirth" presents a survey of all methods of producing amnesia, analgesia and anæsthesia in obstetrics.[2] The book is divided into three parts, the first devoted to anatomy, physiology, pharmacology and psychology, the second to the technique of administration of various drugs, and the third to maternal and fœtal complications requiring special care. The mode of action of the different analgesic drugs and anæsthetics is discussed in detail, together with their effect on both mother and fœtus. There is an excellent section on the psychological management of the pregnant patient.

The authors have been pioneers in developing the technique of continuous caudal anæsthesia for labour, and it is therefore natural that a large part of the book should be devoted to detailed descriptions of this method. The case for the use of caudal anæsthesia is, however, presented fairly, no exaggerated claims being made for it; many contraindications are set out and stress is laid on the fact that it should be attempted only in a well-staffed hospital by a physician experienced in its use. Even under these conditions about 40% of women present contraindications to the use of the method. The great advantage of caudal anæsthesia is that the baby escapes narcosis with its accompanying respiratory depression, and that in the third stage of labour the uterus contracts perfectly with minimal blood loss.

All drugs used for analgesia or amnesia in labour are considered, the method of administration and dosage being described. The various anæsthetic agents are also fully discussed. A good deal of space is devoted to the technique of spinal analgesia and anæsthesia, as well as to the various methods of regional nerve block, such as parasacral and pudendal nerve block. Local anæsthesia for both vaginal delivery and Cæsarean section is also described in detail.

The advantages and disadvantages of the different methods of pain relief are fully set out; indications and contraindications for each are considered.

This book is well printed and profusely illustrated, but there are a few obvious typographical errors; in parts it is verbose and there is some repetition. It is, however, an excellent book completely covering modern knowledge and practice in this subject. It should be very valuable to both the obstetrician and the obstetric anæsthetist.

CHIROPODY.

AT the present time, when standardization of training in chiropody is under discussion, the publication of "The Essentials of Chiropody", by Charles A. Pratt, is timely.[1] In this book the author has provided a clear, concise account of chiropody from the student's point of view.

The subject matter is built on a sound anatomical basis, and in this regard excellent use has been made of diagrams from a well-known pocket atlas. Care has been taken to indicate the limitations of the chiropodist and stress has been laid on the conditions under which medical advice should be obtained. Good counsel is given about the handling of patients and practical details are supplied on how to set up practice. The only criticism that can be offered concerns what is generally considered a very minor complaint—the soft corn. The author has omitted to mention the very frequent association of a projecting tubercle at the base of a phalanx. When this is present no amount of conservative treatment, short of constant wearing of an interdigital pad, will afford relief.

The book can be strongly recommended to students of chiropody as one which will provide an essentially practical approach to their problems. If more textbooks were written along these lines the way of the student would be made easier. The book will undoubtedly find its place as a standard textbook, but the relatively high price may prevent it enjoying the popularity that it deserves.

THE HAIR AND THE SCALP.

THE third edition of "The Hair and Scalp", by Agnes Savill, has been very considerably revised, especially in regard to modern therapy.[2] The section dealing with the more rare conditions has been enlarged to include a number of conditions more common in North America. As the subject matter is restricted, it is natural that there is a good deal of detail which many practitioners will but rarely require. However, the arrangement of the book, by which presenting symptoms are used as chapter headings, makes it a handy work for reference. Modern hair-waving procedures have been closely investigated, and the author gives an insight into these methods which, it is felt, practitioners may often need to investigate. Some methods of treatment that are described, such as vaccine therapy for seborrhœa of the scalp, may not meet with agreement from all practitioners, but treatment is clearly set out and alternative measures are suggested. This is a book which will interest dermatologists and provide a most useful reference for practitioners generally.

---

[1] "Textbook of Medicine", by Various Authors, edited by J. J. Conybeare, M.C., D.M. (Oxon.), F.R.C.P.; Seventh Edition; 1945. Edinburgh: E. and S. Livingstone Limited. 8½" × 5½", pp. 1184, with many illustrations and X-ray plates. Price: 30s. net.

[2] "Control of Pain in Childbirth", by Clifford B. Lull, M.D., F.A.C.S., and Robert A. Hingston, M.D., with an introduction by Norris W. Vaux, M.D.; Second Edition; 1945. Philadelphia: J. B. Lippincott Company. 9" × 6", pp. 376, with many illustrations. Price: 56s.

---

[1] "The Essentials of Chiropody", by Charles A. Pratt, Member of the Chartered Society of Physiotherapy; 1945. London: H. K. Lewis and Company Limited. 7¼" × 4¾", pp. 168, with 34 illustrations. Price: 10s. net.

[2] "The Hair and Scalp", by Agnes Savill, M.A., M.D. (Glasgow), F.R.C.P.I.; Third Edition; 1944. London: Edward Arnold and Company. 8½" × 5½", pp. 314, with 50 illustrations. Price: 16s. net.

The Medical Journal of Australia

SATURDAY, MARCH 23, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

CLINICAL DISCIPLINE.

If one were asked to define discipline, the reply would probably be given that the word referred to the means by which practices, rules and regulations are enforced. This would be readily understood by every member of the community which has been regimented in many ways during the past five years in order that the war might be successfully waged. The voluntary submission of the people to discipline was one of the ways in which morale was kept at a high level. This probably was not so widely recognized as was the importance of discipline in the attainment of efficiency. In the ranks of the armed forces discipline must obviously be maintained, but there is no need, particularly in a country like Australia, to enlarge on the value of the intelligent planning of discipline if its ready acceptance is desired. When the term discipline is applied to the ordinary individual most people will think of a process of moral or mental training that will be a help in the everyday tasks of life. It is difficult to imagine any occupation in which discipline may be neglected without the sacrifice of valuable assets; and naturally the most important form of discipline is that of the self. The medical student, from the day that he embarks on his career at the medical school, comes under a form of discipline to which he will have to remain subject throughout the whole of his professional life. Many a member of the non-medical community has marvelled at the apparently sudden metamorphosis, on the conferring of a degree, of the irresponsible undergraduate into a sober-minded practitioner. For this change, which seems to take place almost overnight, the student has been undergoing years of training, of discipline, at the hands of teachers who have themselves been rooted and grounded and have grown to professional manhood in the traditions and usages of their predecessors through the centuries. The past five years have been years of stress, to some extent of short cuts and of make-shifts. If discipline has been more severe in some general directions, there is possibly an impression that in other spheres such as those of professional education and practice it has not been so necessary. The traditions of medicine, in regard to the kind of men who practise it and the type of service that they give, must be zealously guarded, both for the sake of medicine itself and also for the welfare and safety of the community. In regard to the larger questions of professional behaviour and general bearing there is not so much need to consider the question; but the work of the civilian practitioner has been so heavy, he has had so little time to give to each of his patients, that the discipline in clinical work may have become lax and may with advantage be considered. For this purpose reference will be made to three short articles that were published last year by Professor J. A. Ryle.[1]

Medicine, if it is held to include the whole study of disease in man and of man in disease, and particularly the applications of such study, can, Professor Ryle holds, hardly be called a science, although many sciences go to its making. Medicine is not an art, although it has often been so described and is often practised with the skill, imagination and sensitiveness which artists claim. In seeking for a definition, Ryle turns to the writings of Sir Thomas Lewis, and quotes him as looking on medicine as twofold—"theoretical" and "vocational". It was theoretical medicine with its rules of conduct which Lewis described as clinical science. Clinical science, Ryle explains, "is directed towards the advancement of knowledge by careful and ordered clinical observation, by the collection and analysis of factual data and by the application of physiological methods at the bedside, including experiments (which must not be harmful) carried out on healthy volunteers and patients". The vocational physician's primary concern is not considered to be the advancement of knowledge, but the diagnosis of disease and the care of the sick. But these are not rigid and final definitions; Ryle wisely qualifies them. Unless the man of clinical science handles the patient with the same sympathy and frankness and attempts at an understanding of his physical and mental needs as are expected of the vocational physician, and unless the patient is also made aware that he is helping to advance knowledge, Ryle is doubtful whether the clinical scientist should be wholly entrusted with the patient's care. In the same way Ryle expects of the vocational physician the same critical sense expected of the clinical scientist; and he thinks that the former fails in his mission unless he is as watchful of himself as he is of his patients, unless he is thorough in his examinations, keeps faithful records and corrects his errors. It is in this way that he may avoid giving way to the old temptation to claim as *propter* what is only *post* in his clinical work. From this it is clear that the clinical scientist and the vocational practitioner (let us call him the family doctor) have a broad common foothold in medicine. Both have to be humanists and both need a certain scientific outlook. With the clinical scientist, science must be developed in a high degree; the scientific method must figure prominently in his work, but his humanism must not be pushed into the background. He, as a matter of fact, has the more difficult task. The relation of humanism to science is an interesting subject; a discussion in which it is included will be found in The

---

[1] *Guy's Hospital Gazette,* May 12 and 26, June 9, 1945.

MEDICAL JOURNAL OF AUSTRALIA of July 26, 1941. Readers are also referred to an article on realism and humanism in medical training in the *British Medical Journal* of June 16, 1945. But to return to our two types of medical practitioner—the clinical scientist and the family doctor—the point that Ryle makes and on which he bases all his remarks is that both have to cultivate a discipline. The definition of clinical medicine as a discipline is that which appeals to him most.

The next question to be determined is the nature of this discipline to which practitioners of medicine must submit, or which, in Ryle's words, they must cultivate—a much more willing idea than mere submission. Ryle thinks of a mould which must be fashioned to accept its disciplinary content, and he names one prepared by heredity, early upbringing and general education. These may be forthcoming in different degrees, and it is common sense to conclude that discipline cannot be accepted, much less cultivated, by a person entirely unsuited or unprepared for it. That is the chief reason why in these latter days, when admission to medical education is being granted to large numbers of young men and women and a selection has to be made, some means should be devised to select those who are likely to display the qualities of character and ability most to be desired in practitioners of medicine, in other words those likely to profit by clinical discipline and to cultivate it. The preliminary sciences give a student an insight into the problems of biology and the scientific method. This is the stage of thought in terms of local structure, departmental function and complex chemical activity. It is succeeded by one in which symptoms are studied, disease is seen in different manifestations in different subjects, and in which note is taken of the part that ignorance and fear can play in the creation or modification of some forms of disease. The psychological, the social and the economic causes of ill health are among the "ultimate" causes of disease which the student has to discover slowly for himself. The use of modern methods of investigation is not necessarily scientific. "Detailed physical investigation with the aid of these methods has become the order of the day, while the thorough clinical overhaul, the friendly and simple psychological enquiry, and the co-operation of the relative, the ward sister and the almoner as medical social worker is often what is really needed." No one will deny that Ryle is right when he insists that that judgement is most scientific which decides what methods of investigation are needed in any particular case, and that the treatment is most scientific which is best suited to the patient's need and takes into consideration all his circumstances. Ryle has a good deal to say about "system" as a part of clinical discipline and looks on it as necessary in three particular spheres: in the general arrangement of one's life and work, in respect of routine clinical methods and in the keeping of records. Most practitioners could, if need arose, write useful essays on each of these three aspects. This whole subject in fact is one for every member and prospective member of the profession who must think not only of their present attitude to medicine but also of future developments in the medical sciences that will call for study controlled by discipline. A final word must be added for the many practitioners who are too tired to think much about these things, but who before long will have to face them in a straightforward and fearless way. Ryle has some worthwhile observations on the maintenance of the doctor's personal health. With the return of more medical officers from active service many civilian doctors who need rest and recreation will be able to take a holiday. This will need to be done in a planned fashion and with the idea that it is part of the discipline essential to good work, and since every practitioner has a share in the building of the future, in the continual growth and advancement of medicine. We may conclude by quoting Ryle:

> Together the vocational and the theoretical physician can rebuild a discipline which has begun to disintegrate under the influence of a too rapid rate of advance. In the planning, sharing and fulfilment of their tasks they should not ignore the uses of historical retrospect and idealist philosophy. Interest alike in the good of the past and the better yet to be can inspire and balance thought and action, and help the growth of that scientific humanism which is the aim and purpose of all our medicine.

Current Comment.

THE AVAILABILITY OF VITAMINS IN VARIOUS FOODS AND PHARMACEUTICAL PRODUCTS.

IT is well known that foodstuffs are rarely absorbed completely from the human gastro-intestinal tract. In considering the nutritive value of a given food, therefore, one must allow for a coefficient of absorption, if accurate figures are required. This conception is important in such questions as that of the relative calorific value of white bread and wholemeal bread, for the carbohydrate and protein are not absorbed as completely from the latter as they are from the former. In the case of vitamins, the problem of absorption by human beings has been largely neglected. It has been difficult enough to obtain accurate figures of the vitamin content of foodstuffs, and, until recently, investigators have generally avoided the problem of whether chemically equivalent amounts of a vitamin, presented in two different foods, would be absorbed equally well. These problems are now being tackled by D. Melnick, M. Hochberg and B. L. Oser, who have recently published a series of papers on the physiological availability of vitamins for human beings.[1] The technique is such that only the water-soluble vitamins can be investigated, but the method nevertheless constitutes an important advance. Of recent years, laboratory animals have been used less and less in the assay of vitamins. Animal assays are tedious and inaccurate, but they did have the advantage of measuring the availability of the vitamin under consideration. Now, however, assays can be carried out on human beings with a smaller error than was possible with the older methods when animals were used, and it is likely that animal assays of the water-soluble vitamins will be superseded in studies on human nutrition.

The tests are based on the following principle: a normal human subject, living on an adequate diet, will excrete in his urine an amount of the water-soluble vitamins, or their derivatives, which is directly proportional to the quantity consumed. Riboflavin and thiamin are excreted as such in the urine; ascorbic acid is excreted partly in the unaltered form and partly as the oxidized form, dehydroascorbic acid; and niacin is excreted mostly as N^1-methylnicotinamide. Therefore, by measuring the output of these substances in the urine, it is possible to estimate the intake of the appropriate vitamin. If desired, all of these vitamins can be estimated concurrently. It is

---

[1] D. Melnick, M. Hochberg and B. L. Oser: "Physiological Availability of the Vitamins. I. The Human Bioassay Technic", *The Journal of Nutrition*, Volume XXX, 1945, page 67; "Physiological Availability of the Vitamins. II. The Effect of Dietary Thiaminase in Fish Products", *ibidem*, page 81; "Physiological Availability of the Vitamins. III. The Effect of Dietary Ascorbic Acid Oxidase", *ibidem*, page 193; "Physiological Availability of the Vitamins. IV. The Inefficiency of Live Yeast as a Source of Thiamin", *ibidem*, page 201.

Relief of Pain REDUCTION OF SWELLING DECREASE IN MUSCLE SPASM

RELIEF of arthritic pain, sometimes dramatic, often follows the use of 'Calsiod' within a relatively short time; but the best end-results are obtained by continuing treatment for at least a month. Such perseverance is amply repaid, for, in addition to its analgesic effect, 'Calsiod' reduces swelling, decreases muscle spasm, and can restore to useful activity, patients who have been chronic invalids for many months.

Samples and literature on request.

'CALSIOD' TABLETS

Each tablet contains 0·5 grm. Calcium Ortho-Iodoxybenzoate

Indicated in

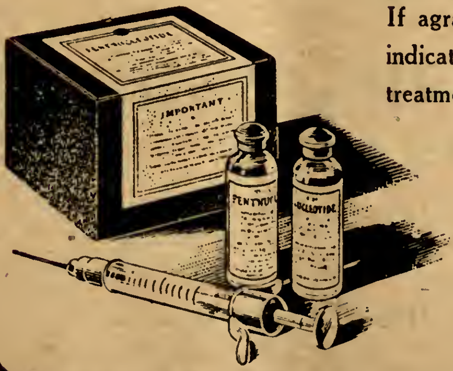
ARTHRITIS • LUMBAGO
FIBROSITIS • MYALGIA
RHEUMATOID CONDITIONS GENERALLY

MENLEY & JAMES (COL.) LTD., P.O. BOX 34, NORTH SYDNEY

In the treatment of AGRANULOCYTOSIS

'Pentnucleotide' is a mixture of the sodium salts of pentose nucleotides for intramuscular use. Full information on request.

The acute fulminating nature of agranulocytosis makes prompt treatment essential. The early administration of 'Pentnucleotide' in adequate dosage may mean the difference between success and failure. It is of the utmost importance to take frequent white blood cell and differential counts with patients undergoing treatment with therapeutic agents which have been associated with the occurrence of leucopenia. If agranulocytosis is suspected, withdrawal of the causative agent is indicated, and when the diagnosis has been made 'Pentnucleotide' treatment should be instituted immediately.



'PENTNUCLEOTIDE'

MENLEY & JAMES (COL.) LTD.
P.O. BOX 34, NORTH SYDNEY, N.S.W.

ANDREW'S PHARMACEUTICAL PREPARATIONS

BROMACLIMAN

for the therapy of menopausal disturbances and climacteric disorders. An excellent sedative and antispasmodic, which gives instant relief, acting not only on the heart and vascular system, but also on the central nervous system.

The following well-balanced and effective formula is a result of extensive and continuous specialisations over a long period:

℞	Bromised Ovary with 20% Brom.	gr. $\frac{3}{4}$
	Theobromine Alkaloid	,, $\frac{3}{4}$
	Calcium Lactate	,, 3
	Benzyl Succinate	,, $\frac{1}{2}$

Packed in bottles of 50 tablets. Available at all leading chemists.

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexœstrol
Sodium Desoxycholate
Stibophen
Stilbœstrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.
D.D.T.

desirable to use five subjects, preferably males, in any one test. The first step is to determine the urinary excretion of the vitamin under consideration during one full day on the basal diet. Next the subjects are given the basal diet, together with an aqueous solution of the vitamin, and the excretion of vitamin is again determined over a period of twenty-four hours. The difference between these two excretions gives the extra excretion resulting from the given test dose. A period of two weeks is then allowed to pass, and the experiment is repeated, except that the known test dose is replaced by the unknown foodstuff containing the vitamin, the availability of which is being determined. From this phase of the experiment one can obtain a figure for the extra excretion of vitamin resulting from the ingestion of a known amount of the test substance. The resulting calculation is simple. For example, in one test an estimation was made of the availability to man of ascorbic acid in a multivitamin tablet. The average basal excretion during the control period was 49 milligrammes per twenty-four hours, and this figure rose to 146 milligrammes per twenty-four hours when the subjects each ingested a pure solution containing 200 milligrammes of ascorbic acid. It thus became obvious that they excreted 48·6% of the test dose. After a lapse of two weeks, the basal excretion and the excretion after a test dose of the tablets were determined, and it was found that the subjects excreted 48% of the test dose. It is therefore apparent that the availability of the ascorbic acid in the tablets was 98·8%.

Using the above technique, Melnick, Hochberg and Oser made a study of the availability of thiamin in certain fish products. It is well known that some fish contain, in the raw state, thiaminase, which rapidly destroys thiamin *in vitro*. It was found that the ingestion of raw clams resulted in a considerable destruction of thiamin in the gastro-intestinal tract. In the test carried out, 50% of the dietary thiamin was destroyed. A similar study was carried out on the effect of ascorbic acid oxidase on the absorption of vitamin *C*. This oxidase is present in many foodstuffs containing ascorbic acid, and *in vitro* it may have a rapid and extensive effect. For example, 60% of the ascorbic acid in the basal diet was destroyed when the mixed diet was incubated at body temperature for six hours. It was found, however, that, when the subjects ate this basal diet, destruction of vitamin *C* did not occur in the interval between ingestion and absorption. Apparently the oxidase is quickly destroyed or inhibited in the gastro-intestinal tract. An interesting problem investigated by the same technique of human bioassay is the availability of thiamin in live yeast. It has usually been considered in the past that live yeast was a good source of thiamin. It now appears that the correct view is that live yeast contains large amounts of thiamin, but that only some 17% of this is available to human subjects.

Using the same methods as those outlined above, the authors have examined the availability to man of water-soluble vitamins in various pharmaceutical preparations.[1] Three types of product were examined in detail: (i) In the case of a multivitamin-mineral tablet, the vitamins were completely absorbed. Thiamin, in fact, was more completely absorbed from the tablet than it was from a pure solution of the vitamin. This was presumably due to an enhanced stability, in the gastro-intestinal tract, of the thiamin in the tablet as compared with the thiamin in solution. (ii) In the case of a tablet protectively coated with a water-insoluble enzyme-resistant film, the absorption of the more soluble components (ascorbic acid, thiamin and nicotinamide) was not interfered with, but the absorption of riboflavin was reduced by about half. (iii) A capsule containing a fuller's earth adsorbate of thiamin yielded only about 35% of its thiamin content. The fuller's earth retains the thiamin tenaciously.

Further papers from this group of workers are promised. They will repay careful study by anyone interested in human nutrition.

---

[1] B. L. Oser, D. Melnick and M. Hochberg: "Physiological Availability of the Vitamins: Study of Methods for Determining Availability of Vitamins in Pharmaceutical Products", *Industrial Engineering Chemistry* (Analytical Edition), Volume XVII, July, 1945, page 405.

PENICILLIN AND THE SKIN.

That penicillin has been exploited in the treatment of infective skin conditions is exemplified in several of the "abstracts" published in another page of this issue. The latest report is one of a "therapeutic trial" of penicillin carried out by J. H. Twiston Davies, Kendal Dixon and C. H. Stuart-Harris.[1] The conditions dealt with by them included annular impetigo, sigilliform impetigo, ecthyma, furunculosis and impetiginized seborrhœa and seborrhœic dermatitis. In most cases penicillin was applied as an aqueous spray containing 1,000 units per millilitre. Only in annular (staphylococcal) impetigo was penicillin much superior to other remedies. In seborrhœic dermatitis, which was the main type of pyoderma treated, penicillin was no more effective than other remedies. In some cases penicillin gave very good results, but these were unpredictable, and sometimes inferior results were forthcoming. In no case was penicillin harmful. In ecthyma penicillin compared unfavourably with other remedies. The most interesting feature of the work was that the success or failure of therapy could not be correlated with the flora isolated. In spite of treatment, organisms sensitive to penicillin could usually be recovered from the lesions after three days of treatment. In some cases staphylococci resistant to penicillin appeared during treatment, and this happened oftener as treatment was prolonged. These cases as well as a few in which organisms resistant to penicillin were present before treatment was begun, were on the whole refractory to penicillin treatment. At the same time our authors point out that the appearance or the initial presence of staphylococci resistant to penicillin was not the general cause of resistance to penicillin treatment, because in many refractory cases fully sensitive staphylococci were repeatedly recovered from the lesions after prolonged spraying as well as after intramuscular therapy. Davies and his co-workers are disappointed at the results. (Compare the results claimed by Cohen and Pfaff in the abstract mentioned above.) They have set an interesting problem. One suggestion to account for the failure of the penicillin therapy has to do with the depth of the lesions. Another is that the disease is often due to the interaction of ætiologically different factors; such a factor might be the hypothetical cause of the seborrhœic state. Davies and his collaborators mention other authors who have found that success with various substances in impetigo is unrelated to bacteriological findings. Clearly much work remains to be done, not only on the action of penicillin in varying circumstances in different maladies, but also on the different factors operating in the maladies themselves.

A TWENTY-FIFTH ANNIVERSARY.

The American Journal of Obstetrics and Gynecology has celebrated its twenty-fifth birthday. This happened in October last, and the issue for December, 1945, celebrates the occasion. In 1919 the *American Journal of Obstetrics and Diseases of Women and Children* ceased publication after a career which began in 1868; the *American Journal of Obstetrics and Gynecology* is its successor. From its title page we learn that it is the official organ of no less than nineteen associations and societies. The past twenty-five years have seen many changes and developments in both obstetrics and gynæcology; these have been recorded in the pages of the journal. The advances of recent years have resulted from study, experiment and research in ward and laboratory, and the basic sciences have yielded their share to the present state of knowledge. Obstetrician and gynæcologist must therefore be students of an ever-widening field. The *American Journal of Obstetrics and Gynecology* is one of the aids on which practitioners in every part of the English-speaking world may rely. For the whole of its life the journal has been under the continuous editorship of Dr. George W. Kosmak. To the organization controlling the journal and to its editor we offer our warm congratulations and our good wishes.

---

[1] *The Quarterly Journal of Medicine*, October, 1945.

Abstracts from Medical Literature.

DERMATOLOGY.

Penicillin in Dermatological Therapy.

H. M. COHEN AND R. O. PFAFF (*Archives of Dermatology and Syphilology*, March, 1945) report on the results obtained in 100 cases in which penicillin was used in dermatological practice. In dermatological therapy there are two methods of administering penicillin: (i) local administration in the form of solutions and ointments; (ii) intramuscular injection. A penicillin ointment was used for local application. The authors first used 100,000 Oxford units to one ounce of ointment base. Later they found that 50,000 units to one ounce of ointment base produced the same therapeutic results as the more concentrated product, and this strength was subsequently used in all cases. The ointment base consisted of 50% hydrous wool fat and 50% rose water ointment. Intramuscularly the authors gave 20,000 units every four hours. To determine the irritating qualities of penicillin when applied locally to the skin, 524 patients were selected at random in hospital, and patch tests were performed with the ointment. None of the patients had a positive reaction at twenty-four hours and at forty-eight hours, and five had a positive reaction persisting for periods varying from forty-eight hours to one week—an incidence of 0·95%. The diseases treated were classified in the following five groups: (i) *acne vulgaris*, (ii) pyoderma, (iii) eczema, (iv) so-called tropical ulcer, (v) miscellaneous. *Acne vulgaris* with superimposed painful infection was treated by intramuscular injections of 200,000 units of penicillin. Of 32 patients so treated, only one showed decided improvement, the condition of 11 others was slightly improved, 19 showed no change, and one looked worse after treatment. The authors consequently think that penicillin is of little use in the treatment of acne. As a group, the patients suffering from pyoderma presented the most promising field for penicillin therapy. The use of penicillin for impetigo is indicated in the following circumstances: (i) when sensitivity to mercury or sulphonamide compounds is present; (ii) when the lesions are resistant to treatment; (iii) when rapid cure is imperative. In folliculitis the results obtained with penicillin are questionable. One carbuncle was treated with penicillin ointment after incision and drainage. Within twenty-four hours after penicillin ointment had been applied to the crater, no pus was evident. Healing was rapid. In the treatment of dermatophytosis with streptococcal pyoderma, 200 units of penicillin were given intramuscularly, and penicillin ointment was applied to the open lesions. The results were excellent. The rate of recurrence after penicillin therapy was greatly reduced. One patient suffering from severe *herpes zoster* with infection rapidly responded to the penicillin ointment. The results obtained with penicillin in the treatment of *sycosis barbæ* were satisfactory. Penicillin ointment, from the authors' observations, is indicated in infectious eczematoid dermatitis. The results of treatment of so-called tropical ulcers were good. Moniliasis also responded favourably to penicillin ointment.

Vitamin Therapy in Dermatology.

M. E. OBERMAYER AND K. FROST (*Archives of Dermatology and Syphilology*, May, 1945) point out that vitamin therapy in the dermatological field is used for a variety of diseases, which may be divided into two groups: (*a*) the true and established vitamin deficiencies and (*b*) dermatosis in which a true vitamin deficiency is either debatable or undemonstrable, but for which vitamin therapy appears to be of benefit. Some dermatoses of the latter group are the subject of the authors' discussion. In most dermatological diseases which yield to treatment with vitamins infinitely higher doses are required than are provided by dietary measures or by the administration of commercially advertised vitamin concentrate mixtures. An important and as yet not generally recognized effect of a high intake of vitamins *A*, *C* and *D* and the *B* complex is its aid in the control of the allergic state. Stokes has expressed the opinion that it may be due in part to the action of the vitamin *B* complex in the intestinal tract and perhaps to the anti-dermatitis and hyperchlorhydria-preventing fractions. In this connexion it is interesting that the heterogeneous group of chronic inflammatory dermatoses which Cross reported were beneficially affected by vitamin *B* complex therapy, was characterized by low gastric acidity. Vitamin *A* may be beneficial in the treatment of diseases characterized by excessive or abnormal keratinization, either follicular or diffuse, even when the underlying inflammatory dermatosis does not in itself appear suitable for this form of therapy. Striking results were obtained with the administration of vitamin *A* in two cases of unusually hyperkeratotic *lichen simplex chronicus* in which other treatment had proved ineffective. Vitamin *A* therapy has also been of benefit in the handling of some forms of *acne vulgaris*. The use of the vitamin *B* complex is recommended for the management of dermatoses in which allergic factors are involved. The beneficial effect may be due to the antiachlorhydric fraction. Cheilosis was formerly believed to represent uniformly a riboflavin deficiency, but it is emphasized that factors unrelated to vitamins, such as epithelial hypersensitivity and anatomical conditions, for example, the shape of the mouth, in others improperly fitting dentures, may be important in its genesis.

Allergic Reactions during the Administration of Penicillin.

J. HENDERSON (*Archives of Dermatology and Syphilology*, August, 1945) states that Jadassohn, Scharf and Sulzberger and their collaborators found that products of fungi were capable of producing anaphylactic shock in guinea-pigs and found that the uterine horn of a guinea-pig (Schultz-Dale reaction) was sensitized to these extracts. They were also able to elicit immediate reactions in cutaneous sites passively sensitized by a previous injection of serum containing Prausnitz-Küstner antibodies to trycophyton. By use of the Schultz-Dale phenomenon these investigators found that extracts prepared from various species of dermatophytes all showed a common antigenic factor. It is now an ascertained fact that all extracts of the hyphomycetes contain, in addition to the allergic fractions peculiar to each particular species, a powerful allergenic principle common to and characteristic of all. Dermatologists who are cognizant of the many explosive reactions from fungous toxins, such as bullous eruption of the hands and feet, generalized "ids", erysipelas-like trycophytic manifestations and many others, have watched with interest those patients who were being treated with the new drug penicillin. The sites in which the fungi usually manifest themselves have been carefully and frequently examined for evidence of any change in local tissue resistance or of allergic reactions to the common hyphomycetic allergin in penicillin. The author observed two cases in which almost identical reactions occurred during the administration of penicillin. After the administration of penicillin for several days a vesicular eruption appeared on the genitals and on the web of the fingers and spread to the crural region. The itching was severe. The second patient also had a vesicular eruption on the webs of the toes. The first patient said that he had never had dermatophytosis of the feet or any crural infection from fungus. The other had a history of previous dermatophytosis of the feet. The pruritus abated promptly after penicillin therapy was stopped. An intradermal test with penicillin did not produce any reaction in the first case; an intradermal test with trichophytin gave no reaction, but an intradermal test with oidiomycin gave a strongly positive reaction in forty-eight hours. In the second dose an intradermal test with 0·1 millilitre of freshly prepared penicillin containing 1,000 units produced in sixty hours a vesicle with an erythematous base. Intradermal tests with trichophytin and oidiomycin gave negative results. The author suggests that patients selected for penicillin therapy should be closely questioned about previous reactions to fungi. Those reporting reactions to fungi should be tested with from 500 to 1,000 units of penicillin intradermally. If a bullous lesion appears at the site of injection, extreme caution should be used in the administration of penicillin. If a history of chronic infection is elicited, great care should be taken during the administration of penicillin to areas subject to mycotic infection.

Hæmangioendothelioma of the Skin.

M. R. CARO AND C. H. STUBENRAUCH (*Archives of Dermatology and Syphilology*, May, 1945) state that examples are occasionally seen of tumours of the blood vessels which histologically show great cellular activity, but which follow a benign course. Thereafter, however, vascular tumours are encountered which seem histologically benign, but which in time metastasize and eventually cause death. A simple grouping based on both clinical and histological features would divide such tumours into (*a*) hæmangiomata, which are benign clinically and histologically; (*b*) hæmangioendotheliomata, in which histologically there is seen proliferation of endothelial cells and clinically a gradation from a benign to a malignant course; and (*c*) malignant endotheliomata, in which malignancy is evident clinically and histologically. The authors report a case in detail. A diagnosis of hæmangioendothelioma cannot be made on clinical grounds alone, for the tumour may vary in appearance from a small pedunculated nodule to a large invasive mass. In general these tumours are soft, dark red and raised above the surface of the skin, and they grow slowly but progressively. Pigmentation is often present because of the tendency to bleeding within the tumour. The response to X-ray or radium therapy is generally poor. There is a tendency to recurrence after excision, and metastases when they occur are late in the course of the disease. The diagnosis may be made most conclusively on histological examination. The tumour is composed of masses of endothelial cells and vascular tubes which in places are lined with several layers of endothelial cells and which exhibit a tendency for these lumina to anastomose. Hæmangioendotheliomata must be differentiated from hæmangioma, *granuloma pyogenicum*, malignant endothelioma and idiopathic multiple hæmorrhagic sarcoma of Kaposi. Hæmangioma generally appears early in life and histologically is composed of dilated capillaries which are filled with blood and generally lined by a single layer of normal endothelial cells. *Granuloma pyogenicum* frequently appears at the site of an injury, grows rapidly to produce a tumour that is pedunculated or sessile, and bleeds readily to develop a crusted surface or one covered by a purulent exudate. Histologically there is considerable proliferation of young blood vessels which are lined by a single layer of endothelium. Often there is a diffuse infiltrate throughout the stroma containing many polymorphonuclear leucocytes, but in some cases there is sufficient proliferation of fibroblasts to make the differentiation from hæmangioendothelioma difficult. Malignant endothelioma cannot always be readily differentiated clinically or histologically from hæmangioendothelioma. In the former, however, there is a great predominance of cellular elements, but there is very little tendency for the development of vessels, and mitotic figures are more frequent. In Kaposi's sarcoma the lesions begin as bluish red stains in which a definite infiltration soon develops. The hands and feet are the areas most often involved at first. The lesions enlarge slowly to produce deep firm nodules.

UROLOGY.

Aluminium Hydroxide Gels in Renal Calculus.

E. Shorr (*The Journal of Urology*, April, 1945) states that the administration of "Amphojel" (a trade form of aluminium hydroxide gel) diverts to the alimentary tract for excretion 90% of the phosphates normally excreted in the urine. When this drug is taken by mouth, a highly insoluble aluminium phosphate is formed in the gut and is excreted as such in the stools. The dose required to secure the full effect for such patients as those immobilized by fractures *et cetera* is about 30 to 40 millilitres taken by mouth every six hours. The method, as well as being valuable as a prophylactic against alkaline stone formation, is also useful when an alkaline urine is infected with urea-splitting germs. In such cases, even an acid-ash diet *plus* acidifying agents usually fails to alter the reaction. However, with "Amphojel" the excretion of phosphate ions is profoundly lowered and the acidifying agents and diet have their opportunity. If acidification is possible in such cases it may be that in future it will be possible to dissolve calcium and phosphate ions out of any alkaline calculi which are present. An additional help is the temporary administration of œstrogens. When the nipples (in the male) become slightly sensitive, treatment is discontinued till they are normal, when it is resumed. Œstrogens cause increased excretion of citric acid in the urine. This reduces the number of calcium ions participating in the precipitation of calcium phosphate, replacing them with a weakly ionized soluble calcium citrate complex. The amount of phosphorus ingested by the patient is reduced by introducing the following articles of diet: nuts, dried apricots, barley, rice, dried beans, wholemeal bread, hard cheese, cocoa, lentils, liver, dried peas, sweetbreads, kidneys, heart, fish roe, sardines, "Bovril".

Ureteric Obstruction in Children.

C. J. E. Kickham (*The Journal of Urology*, June, 1945) sees a great vista for preventive urology in the early diagnosis and prompt treatment of diseases and abnormalities of the urinary tract in early life. A large percentage of these conditions have a congenital background. When adult life is reached the penalty for the neglect of early treatment is the common sacrifice of a kidney by nephrectomy when an earlier plastic operation would have rendered this unnecessary. Likewise, many a case of pyelitis of pregnancy is but the recrudescence of an infection in childhood with an underlying basis of obstruction in some part of the ureter. Chronic unilateral renal infections, if allowed to smoulder quietly for years, may finally be the cause of hypertension leading to the sacrifice of the affected organ, the basis again being some form of congenital obstruction. There is no longer any excuse for the clinician who neglects pathological study of the urine, plain skiagrams and excretion urograms. Now that the urologist has the delicate child cystoscope designed by Butterfield, Young, McCarthy and Campbell, he has no excuse for neglecting full retrograde pyelographic study. A urinary infection which does not respond promptly and fully to drug treatment calls for special study. Obstruction may occur anywhere from the external meatus to the uriniferous tubules, but the ureter is the commonest site. A urinary infection should not be considered cured until the specimen is normal when examined microscopically and by cultural methods. Symptoms of vesical irritation, the so-called enuresis, which do not respond to a reasonable period of medical therapy should be investigated fully. Abdominal pain of ureteric origin is frequently attributed to appendicitis. Many a young adult who comes up for treatment of hydronephrosis has a tale-telling appendicectomy scar. The ultimate goal of all renal surgery except in tuberculosis and malignant disease is to conserve renal tissue if there is no undue hazard in so doing. The tendency to bilateral involvement in hydronephrosis makes it imperative to attempt plastic surgery to relieve obstructions at and near the upper end of the ureter. For stricture of the upper portion of the ureter a Rammstedt type of operation is best. For stricture at the uretero-pelvic juncture, the Foley modification of Schwyzer's Y incision, with V closure; for high implantation of the ureter, Gibson described an operation in 1940 in which the valve-like partition is incised and the cut edges are left unsutured.

Spinal Analgesia in Treatment of Anuria.

R. D. Margraves and E. Bogen (*The Urologic and Cutaneous Review*, May, 1945) state that the value of spinal analgesia in the relief of reflex intestinal obstruction has been attested by numerous observers. It might be expected to relax reflex spasm in other muscular organs, but few reports of such are available. A case is reported of a man, aged twenty-nine years, with anuria of three days' duration thought to be of reflex origin from a median bar bladder neck obstruction. Catheterization revealed an empty bladder and all the routine intravenous and other measures failed to stimulate renal secretion. Preparations were made to repeat endoscopy of the bladder and even to perform nephrostomy, and to this end spinal analgesia, high enough for the latter purpose, was induced. As soon as the analgesia was produced the patient relaxed and abdominal distortion was relieved by the passage of flatus. Only fifteen minutes later on the passage of a cystoscope 150 millilitres of urine were drawn from the bladder, and after that the urinary secretion rapidly increased, but the blood urea content and the temperature rose. The patient was accordingly given more glucose intravenously and also penicillin, and the following day he was well, with a low blood urea content and good secretion. Later excretion pyelograms revealed a ureteric calculus on each side and treatment was then directed to this obstruction.

Transurethral Prostatic Resection.

L. F. Greene (*The Journal of Urology*, August, 1945) states that the introduction of endoscopic prostatic resection has removed one of the chief contraindications to prostatic surgical treatment, namely, advanced renal insufficiency. Patients with this serious complication are no longer condemned to lead catheter life. The important features of the management in such cases are the following: (i) Improvement or restriction of the acid-base metabolism by suitable intravenous infusions and treatment of anæmia by blood transfusions. (ii) Maintenance of a urinary output of 2,000 to 3,000 millilitres daily, thus causing a fall in nitrogenous waste products in the blood. (iii) Drainage by urethral catheter for as short a time as possible. Suprapubic cystotomy with its attendant mortality is not necessary. (iv) Operation to be done as soon as the blood urea concentration is shown to be no longer rising, but to have become stabilized. (v) Completion of the resection within forty-five minutes.

British Medical Association News.

NOTICE.

The General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed or will resume practice as from the dates mentioned:

Dr. J. P. Lyttle, 78, Bradley Street, Goulburn, New South Wales (February 11, 1946).

Dr. A. D. J. Frost, 16, Birriga Road, Bellevue Hill, New South Wales (March 18, 1946).

◆

Medical Societies.

THE PUBLIC MEDICAL OFFICERS' ASSOCIATION OF NEW SOUTH WALES.

The twentieth annual general meeting of the Public Medical Officers' Association of New South Wales was held at British Medical Association House, 135, Macquarie Street, Sydney, on January 29, 1946.

There were 28 members present and Dr. E. T. Hilliard (President) was in the chair. Eight members sent letters appointing proxies, of which seven were accepted as valid.

Financial Statement.

The Honorary Treasurer, Dr. G. C. Smith, presented his financial statement for the year 1945. It showed receipt of £36 12s. 1d. and expenditure of £12 14s. 1d. The total funds on December 31, 1945, were £667 4s. 4d.

Annual Report.

The Honorary Secretary, Dr. H. H. Willis, explained the annual report which was adopted. The report is as follows.

The year 1945 has seen the termination of the German and Japanese wars and the commencement of the civil turmoil that so often follows in the wake of wars. The Committee has in these circumstances felt obliged to adopt a firmer and more aggressive line of action in the furtherance of the Association's objects. This has brought it into conflict with authorities who ordinarily resist our efforts, and this in turn calls for the utmost loyalty of members of the Association.

The Committee met nine times during the year, the attendances of members being as follows:

Dr. E. T. Hilliard (President)	6
Dr. S. Evan Jones	8
Dr. A. T. Edwards	8
Dr. C. E. Percy	7
Dr. G. C. Smith	9
Dr. J. McManamey	8
Dr. J. McF. Rossell	5
Dr. Dorothy McClemens	5
Dr. W. K. Flook	9
Dr. H. H. Willis	9

There are now 112 members on the roll of the Association, of whom 10, having retired from the public services, are honorary members. The Committee regrets having to remove the names of several of the older members who had become unfinancial. To enable the Association to achieve its aims, a large, loyal and enthusiastic membership is necessary. To ensure this, members are asked to recruit new appointees to the services.

Early in the year a reply was received to our representations for government protection of our members, especially those in mental hospitals, against vexatious litigation. The Premier of New South Wales has expressed unwillingness to alter the law or the present procedure in such cases. A promise has been given, however, that radiological and surgical and other specialist services will be made more freely available to our members in the course of their departmental duties.

Our relations with the New South Wales Branch of the British Medical Association remain cordial. The Council of that body is willing and anxious to assist us in our efforts to secure better conditions for salaried medical officers, but as yet has not been able to effect anything in that direction.

It was decided to take no action, as an association, towards reform of the New South Wales Branch of the British Medical Association, leaving it to individual members to take such action personally as they might think fit.

The Public Service Board agreed to receive a deputation from the Association to discuss salaries and conditions of employment of medical officers in the New South Wales State services. On meeting the Board on March 14, 1945, our delegates were informed that the Board had already decided the matters at issue, but were allowed to make extempore comments on a new scale of salaries which became operative on April 1, 1945. This salary scale and the conditions attached to it have caused disappointment and dissatisfaction amongst our members. It would seem that the Public Service Board's sole desire is to obtain medical officers at the cheapest possible rate, irrespective of efficiency, ability or qualifications. Moreover, the introduction of arbitrary bars to promotion is considered objectionable. An attempt to appeal to the Minister for Health against the Public Service Board has been unsuccessful.

An amended scale of salaries remedying some anomalies has been received from the Board and was submitted to members for their consideration.

Our relations with other service organizations remain cordial. The Committee has decided to cooperate with other public service organizations in an agitation to secure abolition of the means test for eligibility for the old-age pension, but declined to cooperate in a movement to secure additional benefits for those who retire from the services before sixty-five years of age.

Election of Office-Bearers.

The following officers of the Association were elected for the ensuing year:

President: Dr. W. K. Flook.

Honorary Secretary: Dr. H. Hastings Willis.

Honorary Treasurer: Dr. Gordon C. Smith.

Honorary Auditor: Dr. S. McGeorge.

Committee: Dr. W. K. Flook, Dr. Dorothy McClemens (Education Department), Dr. J. McManamey, Dr. C. E. Percy and Dr. G. C. Smith (Health Department), Dr. A. T. Edwards and Dr. E. T. Hilliard (Mental Hospitals), Dr. George Saxby (Repatriation Department), and Dr. J. McF. Rossell (Works and Railways).

Other Business.

Dr. Noel Kirkwood moved, pursuant to notice on amendment of the rules, to provide that one representative of medical officers in mental hospitals be elected by deputy superintendents and those of higher rank and one by medical officers in the lower grades. It failed to secure much support and was withdrawn in favour of a motion calling upon the committee to devise a new method of electing members of the committee. On being put to a vote, this motion was lost.

Dr. E. L. Morgan moved that the Association accept an offer from the New South Wales Public Service Board of an agreement covering salaries of medical officers for a period of three years from July 1, 1945. After much animated discussion this was carried by 23 votes to 7, but with an *addendum* that strong representations be made to the Board concerning the application of the new scale to officers in junior grades.

On the motion of Dr. McManamey the committee was instructed to make further representations to the Public Service Board concerning conditions of service, notably quarters and leave.

A motion by Dr. Stevens that a deferred discussion on the desirability of registering the Association as a trade union and industrial union be further deferred for twelve months was carried unanimously.

A further motion by Dr. Stevens instructing the committee to issue a statement of facts concerning matters for discussion at the annual general meeting one month before the meeting was lost.

A hearty vote of thanks to the retiring President for his services during a difficult year concluded the business of the meeting.

Obituary.

HERBERT MICHAEL MORAN.

WE are indebted to Dr. E. H. Molesworth for the following appreciation of the late Dr. Herbert Michael Moran.

H. M. Moran, or as he was commonly called, Paddy, by his colleagues, though not by his family, was one of the most remarkable and learned members of the medical profession in Australia throughout its history. He was not only learned in medicine, but in the literature of three languages, English, French and Italian. More than that, he was a Rugby footballer of international performance. In 1908 he captained a team of Australian rugger players on a visit to England. Unfortunately he injured his shoulder early in the tour and could not play in the later games. Dr. H. Bullock, who played as breakaway on the opposite side of the scrum from Moran for University and New South Wales, and who like so many who knew him well will cherish a lasting brotherly love for him, told me recently that Moran was the fastest man for thirty yards he had ever seen. When the ball was gained by the opposing side and the half-back passed it to the five-eighth, who then sent it on to the centre three-quarter, one or the other of these last two was often amazed that with the ball he also received a paralysing tackle from Moran. Space will not permit me to say more than that he was a great footballer—except this, that when he was in possession of the ball and you tackled him above the knees you either got a neck shattering fend or a bump from a hip that felt like a sledge-hammer. I know, because, though never in his class as a footballer, I have often experienced both shocks in minor games.

But great as was his career as a footballer, it was a trifle as compared with his medical and literary attainments. His Irish blood inspired his first enthusiasm to right the wrongs of Ireland. When the football season of 1908-1909 in England was over he went hotfoot to Ireland to see for himself. He spent about four to six months there, worked in the Rotunda in Dublin, and came back to London cured of his enthusiasm for righting the wrongs of Ireland. I remember well him saying to me: "I am an Australian, but those people over the Irish Channel from whom I sprang will never be satisfied whatever is done for them. I can never take their cause seriously again." He then went to Edinburgh, and in a surprisingly short time got his F.R.C.S.E. Then he came back to London for further experience. While there he shared diggings with H. R. G. Poate, A. J. Mackenzie, Burton Bradley, George Paul and myself. The occupants changed from time to time as one went back to Australia, and someone else arrived. I spent a lot of my time on the Continent, being ordered here and there by my old chief, Dr. Arthur Whitfield. Moran also came over to France, but, as far as I can remember, not to Germany or Austria. But the French language and literature charmed him, and so was laid the foundation of his next enthusiasm which was for French science and literature. On our return to Sydney in 1910 he would not come with me forthwith into Macquarie Street, but did about two years in general practice in Balmain for general experience. During the 1914-1918 war Moran served with the Royal Army Medical Corps as a lieutenant and saw service in the Mediterranean and later in Mesopotamia. He contracted dysentery in a very severe form and was invalided out, I think, before the end of the war. On his return he came into town to do consulting work, but he was already inspired with the idea of surgical application of radium. He went again to Europe, and studied at the *Institut de Radium* under Regaud and Lacassagne. Then came his next great enthusiasm, and for a while he would talk of nothing but French science and literature. His enthusiasm for English literature did not fade. At that time English medicos did not accept the principles of radium treatment as laid down by Regaud. Later, on a third trip I think, he went to Oslo and studied radium work as practised there. On his return from Oslo he got me to join him in collecting a large sum of money for cancer research and treatment. We went out to see Mr. David Benjamin, who was head of a big clothing store in Newtown, an industrial suburb close to the city of Sydney, and managed to interest him in the project. He was a first-class collector of funds, and I think the amount subscribed to the Cancer Research Fund of the University of Sydney was £120,000. The story of the failure of the project is told in the chapter called "Cancer and Chaos" in Moran's first book, "Viewless Winds".

Well, the organization came to an end, but Moran went on with his hospital and private practice of treating cancer by radium or surgery. Those patients whose interests would be better served by X rays, superficial or deep, he sent to others.

There can be no doubt that H. M. Moran was the pioneer of surgical application of radium and the first practitioner to use this weapon by scientific method in Australia, if not in the Empire. But practitioners used to flood his rooms with hopelessly advanced cases, and to turn these people down, to read death sentences every day broke him down. He finally gave up practice entirely, resigned from the Medical Board and all his clubs, and went off on another of his many trips to Europe about ten or twelve years ago. In the meantime he had developed a new enthusiasm for Italian literature, and, as he always did, he translated this into an enthusiasm for Italian people and methods. He went to Italy and stayed there with occasional breaks to enable him to visit Germany and Spain. He even succeeded in getting himself appointed as a sort of medical observer to the Italo-Abyssinian war. His letters contained very caustic comments on the military hygiene of the Italian army. However, he retained for a while some of his enthusiasm for things Italian, and he was an interested observer of the progress and social results of fascism. But, as his letters showed, this was fading rapidly, and, indeed, was only born of his very real fear of communism. At any rate, when war broke out between England and Germany in 1939 he left Italy at once and went through France to England, where he joined the Royal Army Medical Corps again. He was appointed first a lieutenant, but was suddenly promoted to lieutenant-colonel. The work given him was not very congenial, namely, that of chairman of a board to determine whether certain soldiers were to be discharged or not.

It was while he was in Italy and later in the Royal Army Medical Corps during the recent war that he wrote his second book, "Beyond the Hill Lies China", and a third book, which is to be published posthumously. The third book is to be called "In My Fashion". It has been suggested with right that his almost immediate appointment to a lieutenant-colonelcy showed definitely that accusations to the effect that he was pro-fascist were not shared by the authorities in Great Britain, and even provided strong evidence to the opposite theory that he served a purpose useful to Britain during the years he lived in Italy.

It was while he was still in the Royal Army Medical Corps that he had an operation performed for a mole, but the pathological report showed not only that it was not completely removed, but that it was already malignant. But in all his letters to various friends he wrote no word of complaint. It was the irony of fate that he should be attacked by malignant disease against which he had fought so hard and so long, and that the particular variety of growth should have been one which was not amenable to his favourite form of treatment by radium or X rays.

He was a colossal reader of literature, medical and otherwise, in three languages—English, French and Italian. He also spoke and read German and Spanish, though not so freely. He could also remember where he read certain papers on innumerable subjects. This made him a dangerous opponent in debate against a speaker who made rash or inaccurate statements in support of his claims, because Moran could give authority from memory for his opinion that such claims were baseless.

But it will be by his enviable capacity for writing beautiful English prose, and by his books, "Viewless Winds", "Beyond the Hill Lies China" and (almost certainly) "In My Fashion", that he will be remembered longest.

He has made a gift to the University of Sydney to found a prize for an essay on "The History of Medicine and Science". It is proposed to collect the numerous letters which he wrote to various close friends and to publish them after elimination of personal and family references. Those that he wrote to me contain a lot of intensely interesting matter, and I am sure that the volume will have a big sale. Any royalties are to go to the fund which Moran himself started and go to increase the value of the prize for medical history.

Well, Australia has lost one of her great figures in medicine. It is not that he was the best surgeon, though his surgery was excellent, or that today there are not men as good or better than Moran was in his most active period, but that seldom has anyone combined as he did excellence of pioneering medical work with excellence of literary achievement and with a knowledge of four languages (and their literature) beside his own.

His wife and son were with him when he died, and they have both written to me to tell me how peaceful was his end. His son, Patrick, has high mathematical qualifications from Sydney and Cambridge, and having been engaged in some very hush-hush scientific work by the War Office, he now has been awarded some sort of fellowship in Saint John's College, Cambridge. So it is more than probable that he will carry with distinction the flag which his father bore so nobly during his life.

◆

Correspondence.

POLITICS AND THE MEDICAL PROFESSION.

SIR: Dr. O'Day's interesting letter on this subject (February 23, 1946) appears confused. (*a*) If "medicine, like all science, is materialist", and "spirit is the junction [? function] of certain highly organized forms of matter", then what he calls "spirit" falls within the scope of science, and the antithesis he presupposes is unnecessary, and therefore not conducive to freedom. (*b*) "Wickedness" as a factor in ill health may demonstrate itself in ways which vary with the perception of the "wickedness". If the "wickedness" be perceived by one individual and referred to himself, dysfunctions of his "highly organized forms of matter" have been recognized by science. If the "wickedness" be perceived by others and referred to an individual, that individual may experience the extreme of ill health, that is, death, as did Mussolini. At the time of the examination referred to, he was not a healthy man. He was a corpse.

Yours, etc.,

61, Collins Street,
Melbourne,
February 28, 1946.

ALICE BARBER.

SIR: If by "a scientific consideration of those problems" Dr. Gerald O'Day means the interpretation of words and terms into that which they rightly signify, it may, perhaps, be asked if his own philosophy in the issue of February 23 will not also bear some close scrutiny as well as Dr. John Dale's, for his remarks in regard thereto are far from convincing when thus measured.

Nationalization is, truly, distinct from socialization, for the former word suggests conduct whereby some additional territory, property or otherwise, or persons, are acquired and absorbed by a nation, and, in the case of a person, such then becomes "a national" of the State concerned—that is, one takes out naturalization papers in order to become duly nationalized and thus identified in such respect. But socialization applies, surely, to the resumption of some organization already existing within the country in question, and includes not only persons but the property owned and administered thereby as well. Although these terms are invariably used as one, it is, therefore, socialization—and not nationalization—that can be illustrated by "the taking over by a capitalist State of some business, for example, the post, the railways, or the mines, etc."—that is, the government class "taking over" some such business from private enterprise.

What, then, does Dr. O'Day mean by his term "a capitalist State"? Obviously, the words "the State" and "capitalism" require correct definition.

The State signifies the whole community or nation of the country concerned, and which is divisible into (*a*) the government class, (*b*) the rest of the community who pay taxes thereto and are legally controlled thereby and whether in a reasonable or unreasonable sense. Should, then, the existing government class "take over some business", they do so from some private enterprise activity, and thus enlarge their ranks and powers at the expense of the rest of personally owned and conducted industry, and the ordinary government control thereof is at once replaced by government ownership and administration thereof, and which is rightly termed socialization in due deference to the philosophy termed "socialism" with its well-known slogan "the socialization of production, distribution and exchange", and which, when brought to its logical conclusion, means dictatorship and autocracy on the part of the government class with more or less complete subservience on the part of the rest of the community, for the government class then become a vast monopoly that brooks no criticism or interference from the rest of the nation.

"The State" therefore—that is, signifying the whole community or nation—cannot be confused with (*a*) the government class (part of the State), or again with (*b*) the body politic which includes everybody and everything under the suzerainty and jurisdiction of the country concerned.

Once anything is socialized—that is, for instance, railways, banks, airways, coal mines or any other industry—everything in regard thereto is for all practical purposes owned and administered by the government class and not by the whole community as people fondly imagine. Then come for consideration the issues of (*a*) profitable economy from both a local and national point of view, and (*b*) the rights of citizenship that are democracy. The word "capitalism" implicates the capitalistic system of production, distribution and exchange, money and the gold standard, the only alternative to which is barter and savagery. The Soviet Union practises capitalism equally as the democracies, but their system of government is essentially an autocracy—that is, the government class reign supreme and control the whole body politic (people and property) otherwise.

It is the government class, therefore, and not "a capitalist State", that can "take over some business", previously owned and run by private enterprise, and this rightly occurs in certain spheres of industrial activity, but when unduly elaborated destroys the freedoms that constitute democracy and in its place reverts back to an autocratic dictatorship and the slave State, and that, again, inevitably leads to strife, as experience proves.

State capitalism—that is, in the sense of the capitalistic system—is inevitable, but the issue that concerns the populations of every country of the world (and, incidentally, "the medical profession") is whether an industry in particular or industry in general is to be "taken over" by the government class from the private enterprise class, and who are often wrongly termed "the capitalist class" in a derogatory manner by those people who wish to take their place in possession and power—that is, under the guise of "the State"—without earning such in the open arena of competition and hard-won experience within their own country. The government class live by the magic power of taxation of profitable industry, and the more unnecessary and unprofitable their services and transactions, the higher the cost of living and restriction of wealth production.

But Dr. O'Day says, "it is not a question of socialism. A socialist may or may not endorse nationalization", when obviously the socialist (the person who believes in a philosophy termed "socialism") could only endorse socialization of all and sundry—that is, dictatorship.

Nor, again, is socialism "a political economy", for the former merely denotes a philosophy, whereas the latter signifies an economic system that can only be either barter or the capitalistic system of production, distribution and exchange, and the key to which is profitable industry or else bankruptcy. There are some countries, of course, where democracy is not, at present, practicable without specific education.

It is obvious, therefore, that the more the government class "take over" business from the rest of the community (in a democracy), the straighter the road to bankruptcy or to autocratic dictatorship, and which, as experience proves, always leads to strife and eventual war. This latter phenomenon can, perhaps, be explained by the suggestion that all gilded and fervid philosophy leading to aggressive dictatorship is false, and, when attempted to be put into practice, must be associated with force in opposition to reason founded on natural law and thus inevitably heading towards inimical reactions, for natural law cannot be altered by human actions prompted by some false theories whether entitled socialism, communism, fascism, collectivism, clericalism or any other verbal idol, and neither robbery, prison nor murder has ever turned fallacy into truth. The philosophy on which democracy (broadly speaking) is founded has withstood the test of time and two world wars, and, therefore, and quite regardless of the indifference of the average democratic citizen towards improvement thereof, it may be accepted that the democratic code more nearly harmonizes with natural law than any form of autocracy.

Yours, etc.,
138, Darlinghurst Road, Norman Pern.
Darlinghurst,
New South Wales.
March 4, 1946.

Sir: A sophist is defined as one of a class of men who taught eloquence, philosophy and politics in ancient Greece, and who by their fallacious but plausible reasoning puzzled inquirers after truth, weakened the faith of the people and drew upon themselves general hatred and contempt.

Throughout the passing years, this type of propaganda has been used to delude people by the intoxication of wordy slogans, rather than by educating them through the exercise of reason.

Communists are master hands at this type of propaganda; in fact, it is said that there is in Russia a school wherein instruction in the art of using political formulæ is given. We have a good example of sophistry in Dr. O'Day's criticism of Dr. John Dale's address. Happily sophists generally succeed in contradicting themselves, although the contradictions are not always apparent to those uninitiated in this art. Let us follow Dr. O'Day. He states: "Socialism is a political economy, in which the means of production, including the land, are owned collectively."

Now, whether such a state of things is possible or not will not be discussed. But it is plain to anyone who considers the meaning of this definition, and it has been proved by a logical examination of collectivism, that the only way in which such a system could be established and continued would be by an equal distribution of the wealth produced.

This conclusion is also inherent in the formula once so loudly proclaimed by the communist. "From each according to his means, to each according to his needs." This absurdity was, of course, a correct inference to the socialistic premise. But it was found (as all, except the blind followers of the Marxist religion knew it would be found) to be unworkable by the communists in Russia. Now we have a new formula. Dr. O'Day goes on to say: "And payment is made according to quantity and quality of work done." This is the method of reward, and the only method of reward that could be regarded as in accordance with economic law. And we all hope that it will be a reality someday. But it is a direct contradiction of the theory of collectivism, which necessitates perfect equality of rewards.

Readers of your journal need hardly bother about the rest of Dr. O'Day's letter; his system of communism stands or falls upon the justice of equal payments. In Russia we have a very large disparity of rewards. In conclusion, may I ask readers to ponder over one or two of the mystic pomposities in this laughable letter. Here is one: "Materialists . . . write no mystic nonsense about the State. They . . . regard the State as an organ of power, directed against external and internal enemies."

The current and past events certainly truly exemplify the power attitude of the State as extolled by both fascists and communists. The State indeed is an organ of power with them, and centralized power such as must and does exist in both fascist and communistic economics always rests upon the dictatorship of one man, or a small group of men, who govern by the tyranny of the secret police and the death chamber. "Till we have the world . . . in which the administration of things replaces the administration of persons." Here is another of these resounding phrases. What on earth can this nonsense mean, but the relegation of people to the caption of things, which after all is really the communistic objective, that is, the slave State.

Sir, I pray that members of our profession will not be misled by such vapourings, which come and go as the intoxicated devotees of this new religion crave for other and more potent poisons. The cry of "the classless society" has now vanished; so will the "Stateless State" formula change when the dictators in Moscow consider it has served its purpose.

It is indeed naïve of Dr. O'Day to compare the birth of the new world to the birth of a baby, and to suggest that as we have studied the laws of obstetrics, so we should study the laws governing the growth of society. Our experience of the birth of communism and fascism is not likely to deceive anyone that in the future the birth of the new order of society that Dr. O'Day wishes for will be according to law.

The only way these delightful social experiments have been brought to being is by methods of violence, such as has no analogy whatsoever with obstetrical practice either ancient or modern.

I find only admiration for Dr. John Dale's clear and convincing address.

Yours, etc.,
111, Collins Street, Paul G. Dane.
Melbourne,
March 11, 1946.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF LUMBAR INTERVERTEBRAL DISK DISEASE.

Sir: After reading the correspondence of Douglas Miller in your publication of February 23, 1946, I was tempted to ignore his remarks.

On second thoughts, I decided that it is a duty to reply to them, not, certainly, in terms of a discussion between members of a profession whose object should be progressive in its attempts to remove or to alleviate the disabilities of his fellow men, but rather in chiding terms, because of the nature and tone of your correspondent's composition.

I wish, first of all, to apologize to Mr. Hugh Trumble, if, through Douglas Miller's agency, I have in any way disparaged Mr. Trumble's observations regarding the "mobility test" described by Dandy. I will always be happy to demonstrate my interpretation of this test, when a case is available, should he care to come so far.

Douglas Miller's comments on the observations and opinions expressed in my paper appear to me to be based on distortion of my printed words.

Furthermore, I am sure that most of your readers will regret that the term "massive experience" has crept into our Australian medical literature.

I would have enjoyed the reading of, and the privilege of replying to, the criticism of professional brethren in the spirit usually expressed in your columns.

Yours, etc.,
Yorkshire House, Fred Clark.
St. George's Terrace,
Perth.
March 5, 1946.

AUSTRALIA AND SCIENCE: THE UNIVERSITY OF SYDNEY AND SCIENTISTS.

Sir: In your editorial of February 23 you state that one function of a university is to "foster the genius of the gifted student" rather than to educate the multitude. I agree rather with Winston Churchill, who in America recently praised Americans because their university graduates could be numbered in tens of millions, and told all ex-servicemen to seek a university education.

In this connexion I think it time that the other universities of Australia copied the University of Western Australia and ceased to charge fees. Thousands of Western Australians have now attended the university taking courses in arts, science, law, engineering and agriculture without paying a penny for lectures. This year a faculty of dentistry is to be founded.

If the comparatively poor people of this State can afford a free university open to any citizen of Australia, why can't the wealthy State of New South Wales? Why should the free system of State education come to a sudden full stop after students have passed their Leaving Certificate?

I maintain that free university education is more important than uniform railway gauges, which will cost very many millions of pounds.

Yours, etc.,
F. W. SIMPSON.

271, Cambridge Street,
Wembley Park,
Western Australia.
March 7, 1946.

SIR: The implications in Dr. N. E. Goldsworthy's letter to the journal of March 9 are very derogatory to scientists and science.

Science, pure and applied, plays such a major role in the life of the twentieth century, that it is foolish to say that scientific subjects are not cultural, nor essential to a modern education. One purpose of education surely is to equip the individual with a broader and more critical outlook on life, so as to better adapt himself to society, and to improve society for the benefit of others. Therefore, in a scientific age, a scientific eduction is essential for such an outlook.

I wish in no way to detract from the importance of the humanities, literature, history, art *et cetera*; these also are necessary for a full life. My contention is that in the realm of education and culture the arts and sciences are equal partners (not antagonists), both essential to the truly educated person. To ignore the importance of one is to detract from the other.

Therefore salaries of university lecturers in all schools should be raised so as to attract the keenest intellects, both here and overseas, to these so responsible positions.

Yours, etc.,
DAVID R. MOORE.

Balmain and District Hospital,
Booth Street,
Balmain.
March 10, 1946.

ULCERS IN THE MOUTH: AN APPEAL FOR HELP.

SIR: In answer to your correspondent's request for advice on treatment of chronic buccal ulcers, I might mention one such case that I was called upon to treat. This patient had also a mild degree of anæmia which was normocytic and hypochromic, and did not respond to iron. Finally, for no good reason, and purely as a shot in the dark, I gave her a course of "Campolon", two millilitres twice weekly for twenty injections. She lost her ulcers and I have not seen her since. Whether she recovered because of or in spite of the liver therapy I do not know.

Yours, etc.,
LANCE HEWITT.

Cambridge Street,
Enmore,
March 7, 1946.

SIR: The problem of the oral ulcer recently raised in these columns is one on which I have sought help for many years, with, alas, negative results. My wife has suffered from them intermittently for many years and no type of treatment seems to make much difference to their duration or cure. One factor which may provide a clue is that the ulcers seem to be more frequent in warm weather. This may be due to the fact that more sugar is apt to be ingested in the form of stewed fruit, ice-cream, soft drinks, jelly and allied sweets.

Most sufferers from oral ulcer seem to have good digestions, as far as one can ascertain. Patients suffering from peptic ulcer, on the other hand, do not seem to be subject to oral ulcer.

Yours, etc.,
A. BULTEAU.

Gladesville,
New South Wales,
March 13, 1946.

THE FEDERAL MEDICAL WAR RELIEF FUND.

SIR: With reference to the Federal Council's circular appealing for a large sum to form a fund for necessitous returned soldier members, surely it would be more fitting for the British Medical Association to exercise itself in finding us jobs instead of insulting us with charity! There already exist many organizations, munificently endowed, whose function it is to assist returned soldiers whether dustmen or doctors. But it is nobody's business to find jobs for returned doctors.

In my speciality—radiology—every paid job in Victoria, with the natural exception of the Repatriation Department, is held by a non-returned soldier. I would suggest, sir, that the British Medical Association confine its "relief" work to ensuring, with due regard to the *Preference Act*, that paid appointments go to members according to what, and not whom, they know.

Some two years ago I put forward the suggestion that returned soldier matters could best be handled by the formation of either Returned Soldier League sections of the British Medical Association or British Medical Association sub-branches of the league. This circular would seem to stress the advisability of such a course of action.

Yours, etc.,
MARY THORNTON.

Warrandyte,
Victoria,
March 9, 1946.

SIR: When in 1945 the Federal Council decided to inaugurate the Federal Medical War Relief Fund it had before it the splendid record during the past twenty-seven years of the Medical Officers' Relief Fund (Federal) which had helped forty-seven medical officers financially by way of loans and had given medical benevolence to thirty-two widows, children and dependent relatives of deceased service medical officers. This fund is still helping five medical officers with loans and giving medical benevolence to seven beneficiaries.

In asking members of the profession to give generously to this new fund, the Federal Council is not unmindful of its duty to help in the reestablishment of service medical officers, and State rehabilitation committees have been active in surveying the openings for men who desire to take up practice in cities and towns, in specialities and in salaried positions.

It is felt that there may be a number of medical officers who need temporary financial help, in spite of the many organizations, munificently endowed, and who would prefer to obtain that help wholly within the profession which owes so much to them. I would remind Dr. Thornton of the splendid work of legacy, and surely the widows and fatherless children of our deceased members are our legacy. It behoves us to do all in our power to give these dependants the same chance that they would have had had their fathers survived.

Most medical officers who served in the last war and in World War II joined the Returned Soldiers' League on discharge and are proud to wear the badge, but it is felt that it would be unfair to ask special treatment from the league when we have our own organization which has as one of its objects, "to form a bond of union among members of the profession and a medium through which their opinions can be readily ascertained and expressed".

The Federal Council has stressed day in and day out that all wartime appointments should be temporary and that there should be no change in the set-up of medical practice by any government while such a large number of its members were on full-time service.

Dr. Thornton's letter shows that she has entirely missed the point of its appeal, and may I join with the president in asking our members to give generously, to give until it hurts.

Yours, etc.,
W. F. SIMMONS,
Honorary Treasurer.

The Federal Council of the British Medical Association in Australia,
135, Macquarie Street,
Sydney.
March 14, 1946.

TREATMENT OF GUNSHOT WOUNDS OF THE CHEST IN THE FIELD BY PENICILLIN THERAPY.

SIR: I read with considerable interest the report of Rose and Newson in your issue of March 2, 1946. I was particularly interested in the incidence of intrapleural complications. There were five intrapleural infections and one uninfected fibrinohæmothorax in twenty-four cases of hæmothorax with or without lung damage.

Although I realize that the statistical significance of a small series is nil, I feel that a brief report of the local treatment of eleven cases in which lung damage was sustained may be of interest. Cases in which the chest wall only was injured were uncomplicated and have been excluded.

During June and July, 1945, thirteen patients with hæmothorax, with penetration or perforation of the lung by metallic foreign bodies, were admitted under my care. Two died within a few hours of admission. The remaining eleven included two with associated compound fracture of the humerus and three with thoraco-abdominal wounds. All these recovered and none developed intrapleural complications.

Treatment of these patients along general lines was similar to that described by Rose and Newson, although the early transfusion of blood was avoided in uncomplicated cases.(1)

Local treatment differed in three respects:

1. *Operative Surgery.*—This was avoided as far as possible unless indicated for associated wounds. Two of the chest wounds had not been closed by the regimental medical officer. These were closed in the ward without formal excision.(1) The remainder were left undisturbed and all healed well.

2. *Aspiration.*—Daily aspiration of not more than 500 millilitres was carried out, starting forty-eight hours after wounding, and continued until the chest became dry and remained dry. It was felt that delay in commencing aspiration and the removal of a conservative amount of fluid each time would give the wounded lung a chance to seal off.

3. *Local Penicillin.*—Ten millilitres of a solution of penicillin, containing 250 units per millilitre, were injected after the aspiration of each 500 millilitres of fluid. Smaller amounts were injected as the hæmothorax decreased. Larger amounts were avoided for two reasons. First, the irritant effects of penicillin in any but very dilute solutions is well known. It is for this reason that intravenous therapy has been almost universally discarded. Secondly, following Garrod's(2) work, it seemed that with a larger dose the rate of disinfection would certainly not be increased, and would probably be retarded. Even the quantity used was probably a little high.

In conclusion, I would point out that the patient in Case X described by Rose and Newson did very well, even though he had multiple retained foreign bodies, and was not treated according to their criteria for aspiration and injection of penicillin. Aspiration was not performed within twenty-four hours of wounding as they advise, nor were 50,000 units of penicillin injected after the first two aspirations. In fact, this man had only 50,000 units intrapleurally in fourteen days, the lowest amount of their series.

Yours, etc.,

Royal Hobart Hospital,
March 8, 1946.

P. Braithwaite.

References.

(1) C. W. B. Littlejohn: "Report on the Early Treatment and Results of Penetrating Wounds of the Chest", *The Australian and New Zealand Journal of Surgery*, Volume XI, January, 1942, page 147.

(2) Lawrence P. Garrod: "The Action of Penicillin on Bacteria", *British Medical Journal*, January 27, 1945, page 107.

TSUTSUGAMUSHI DISEASE: A WARNING.

Sir: With the impending return of the civil population to New Guinea and the adjacent islands, I feel that publicity should be given to the necessity for preventing tsutsugamushi disease. It has long been known in Malaya that deserted and overgrown plantations are highly dangerous endemic foci for this disease. This fact was repeatedly verified during the New Guinea campaign.

The only satisfactory protective measure at present known is the application of miticides such as di-butyl phthalate or benzyl benzoate. These can be applied by smearing the clothing with two ounces of either, or by impregnating it with a 5% emulsion (a 2% soap solution makes a satisfactory emulsifying agent). In the latter method the clothes are steeped in the emulsion, wrung out, and allowed to dry. Such clothes remain impregnated for three weeks, even after three washings. All the clothing, including socks, but excluding underpants, should be treated. As an added precaution, boots or shoes should be smeared daily.

To destroy mites in areas where huts *et cetera* are to be built, local spraying with creosote or a 5% solution of "666" is suitable; but it must be noted that "D.D.T." is not effective against mites. However, until areas can be satisfactorily cleared of mites and their rodent hosts, clothing impregnation should be practised by all outside workers.

Yours, etc.,

The University Club,
Sydney,
March 14, 1946.

J. T. Gunther.

Naval, Military and Air Force.

DECORATIONS.

Lieutenant-Colonel (Temporary Colonel) Harry Medcalf Fisher has been created an officer of the Military Division of the Most Excellent Order of the British Empire for "brave conduct, unselfish service and skilful handling of medical services".

Lieutenant-Colonel (now Temporary Colonel) John Murray Blair, Lieutenant-Colonel Donald Alastair Cameron and Major (Temporary Lieutenant-Colonel) (now Lieutenant-Colonel) Munro Scott Alexander have been created officers of the Military Division of the Most Excellent Order of the British Empire for "meritorious service and outstanding devotion to duty".

Captain Hugh Busby has been awarded the military cross for "brave conduct and exceptional devotion to duty in assisting sick and wounded personnel".

The following officers have been mentioned in dispatches for "distinguished services" in the South-West Pacific Area: Lieutenant-Colonel (Temporary Colonel) Noel Hunter West Saxby, O.B.E., Lieutenant-Colonel Stanley Charles Matthew Hiatt, Lieutenant-Colonel Paul William Hopkins, M.C., Lieutenant-Colonel William Ernest Edward Langford, Lieutenant-Colonel Kelvin Alexander McGarrity, Lieutenant-Colonel Stanley Devenish-Meares, Lieutenant-Colonel Arthur Hunter Powel, D.S.O., V.D., Lieutenant-Colonel Clive Herbert Selby, Lieutenant-Colonel Harley Irwin Turnbull, Major Keith Boyce Armstrong, Major Thomas Clive Backhouse, Major John Martin Downing, Major Mervyn Bruce Duncan, Major Thomas Keep Durbridge, Major Dudley De La Force Henry, Major Ian Campbell MacDonald, Major James Frank Stewart McKee, Major Hedley Ray Millikan, Major Peter James Parsons, Major Thomas Frederick Rose, Captain Richard James Bottcher, Captain Hugh Glynn-Connolly, M.C., Captain Anthony Francis McSweeney, Captain Alan Scurrah, Captain Thelma Gillespie Secretan.

CASUALTIES.

According to the casualty list received on March 12, 1946, Major D. R. McFarlane, Caulfield, Victoria, is reported as having died of illness.

◆

THE FEDERAL MEDICAL WAR RELIEF FUND.

The following contributions to the Federal Medical War Relief Fund have been received.

Victoria.

T. F. Ryan, Marion B. Wanliss, J. Jamison Black, Fay Maclure, £100.

John S. Green, £52 10s.

John H. Shaw, G. R. A. Syme, W. R. Groves, £50.

W. F. Brownell, £30.

S. Ingwersen, G. R. Felstead, £25.

D. Bickart, A. E. Coates, Konrad Hiller, Donald Nance, Annonymous, £21.

Mary De Garis, G. M. Scott, C. Sutherland, Mona M. Blanch, F. V. Scholes, £20.

L. F. Clendinnen, H. F. Praagst, R. Kaye Scott, £17 10s.

D. Brown, Vernon Davies, £15 15s.

B. L. Stanton, C. B. Melville, B. McColl, D. Thomson, F. G. Fenton, G. C. Love, E. Rogerson, Lewis Phillips, Clive Shields, H. B. Rudduck, H. H. Martin, R. Walmer Weaver, N. L. Dodd, Walter Williams, J. A. O'Brien (first instalment), H. Peake, A. L. Thom, I. J. Paull, M. Snow, J. C. P. Strachan, Alice M. Barber, Walter Summons, J. H. Paterson, J. H. Sleeman, George Simpson, E. W. Sutcliffe, L. Potter, J. K. MacKenzie, D. C. Worch, A. P. Derham, J. A. Smeal, E. R. Cordner, M. H. Mailer, J. C. Douglas, E. Danby, James M. Andrew, C. H. Prouse, R. S. Lawson, R. N. Naylor, Gladys Hallows, G. M. Tallent, P. R. Slater, E. T. Cato, H. C. Disher, Harley Grover, F. M. Burnet, F. Rosanove, A. I. Chapman, Lorna D. Jones, Winifred Mackenzie, W. L. Colquhoun, J. S. Ormond, W. Ward, J. A. Cahill, F. J. Bonnin, Ernest Guymer, E. J. C. Hamp, J. C. Harper, R. Stott, W. H. J. Moore, A. Saleeba, J, Patrick, P. Langmore,

J. S. Murphy, N. N. Harrington, K. J. O'Day (first instalment), E. Sandner, £10 10s.

E. R. Killmier, £8.

J. Rowan, £7 7s.

J. E. Thomas, £6 6s.

F. R. Meagher, L. Joel, B. Ross-Woods, F. E. Langley, J. Summons, J. L. Bignell, J. A. McLean, E. M. Inglis, B. Vaughan (first instalment), F. G. Stephens, F. Hetherington, T. V. Nihill, V. Hurley, C. F. MacGillicuddy, J. Moreland, W. A. Bossence, £5 5s.

R. Clarke and E. C. Edgerton (joint contribution), M. Cockbill, Mary R. Herring, J. Horace Downing, Jessie B. Simpson, A. R. Kelly, A. A. Crooks, T. Vorrath, Kenneth Smith, H. I. Robinson, G. A. Prior, Annonymous, £5.

F. J. Colahan (first instalment), Leonard W. Johnston (first instalment), A. L. McInnes, £4 4s.

G. E. Cole (first instalment), Elizabeth White, J. V. Ashburner, £3 3s.

C. E. Sawrey, A. C. Reith, K. Heard, L. Kirsner, A. J. Aitken, Victor Brand, John Body, A. L. Hare, R. K. Doig, B. Ostberg, W. Hamilton Smith, W. J. Craig, £2 2s.

J. J. Hamilton, Frank Kenny, John H. Colebatch, E. A. Daley, £1 1s.

Total: £1,871 12s.

Grand total to date: £3,897 7s. 3d.

◆

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Pope, David Carington, M.B., B.S., 1942 (Univ. Sydney), 62, Roseville Avenue, Roseville.

McCaffery, Louis Henry, M.B., B.S., 1945 (Univ. Sydney), 7, Kent Street, Epping.

McNamee, Kevin Matthew, M.B., B.S., 1939 (Univ. Sydney), High Street, West Maitland.

Scanlan, Derrick, M.B., 1940 (Univ. Sydney), 16, Terrace Street, Newcastle.

◆

Medical Appointments.

The following have been appointed honorary clinical assistants at the Royal Adelaide Hospital, Adelaide: *Medical Section*, Dr. S. M. L. Dunstone; *Surgical Section*, Dr. B. E. Lawrence; *Gynæcological Section*, Dr. H. E. Pellew and Dr. H. F. Hustler.

Dr. J. R. Cornish has been appointed honorary anæsthetist at the Royal Adelaide Hospital, Adelaide.

Dr. J. P. Ainslie has been elected a member of the Senate of the University of Western Australia.

Dr. A. N. Kingsbury has been appointed a member of the Food Standards Advisory Committee under the provisions of section 201 of the *Health Act*, 1911-1944, of Western Australia.

◆

Books Received.

"The Diagnosis of Nervous Diseases", by Sir James Purves-Stewart, K.C.M.G., C.B., M.D. (Edin.), F.R.C.P.; Ninth Edition; 1945. London: Edward Arnold and Company. 8½" × 5½", pp. 888, with many illustrations. Price: 40s. net.

"Food Yeast: A Survey of its Nutritive Value", by the Accessory Food Factors Committee, Medical Research Council, War Memorandum No. 16; 1945. London: His Majesty's Stationery Office. 9½" × 6", pp. 16. Price: 3d.

"Synopsis of Obstetrics and Gynæcology", by Aleck W. Bourne, M.A., M.B., B.Ch. (Cambridge), F.R.C.S. (England), F.R.C.O.G.; Ninth Edition; 1945. Bristol: John Wright and Sons Limited. London: Simpkin Marshall (1941) Limited. 7½" × 5", pp. 507, with illustrations. Price: 21s. net.

"The Symptomatic Diagnosis and Treatment of Gynæcological Disorders", by Margaret Moore White, M.D. (London), F.R.C.S. (England), M.R.C.O.G., with a foreword by F. J. Browne, M.D. (Aberdeen), D.Sc., F.R.C.S. (Edinburgh), F.R.C.O.G.; Second Edition; 1946. London: H. K. Lewis and Company Limited. 8½" × 5½", pp. 256, with 108 illustrations. Price: 16s. net.

"Psychological Medicine: A Short Introduction to Psychiatry with an Appendix on Psychiatry Associated with War Conditions", by Desmond Curran, M.B., F.R.C.P., D.P.M., and Eric Guttmann, M.D., M.R.C.P., with a foreword by J. J. Conybeare, D.M. (Oxon.), F.R.C.P.; Second Edition; 1945. Edinburgh: E. and S. Livingstone Limited. 8½" × 5½", pp. 254, with illustrations. Price: 10s. 6d., postage 6d.

Diary for the Month.

MARCH 26.—New South Wales Branch, B.M.A.: Council Quarterly.
MARCH 27.—Victorian Branch, B.M.A.: Council Meeting.
MARCH 28.—New South Wales Branch, B.M.A.: Annual Meeting.
APRIL 2.—New South Wales Branch, B.M.A.: Council.
APRIL 3.—Western Australian Branch, B.M.A.: Council Meeting.
APRIL 3.—Victorian Branch, B.M.A.: Branch Meeting.
APRIL 4.—South Australian Branch, B.M.A.: Council Meeting.
APRIL 5.—Queensland Branch, B.M.A.: Branch Meeting.
APRIL 9.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
APRIL 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
APRIL 9.—New South Wales Branch, B.M.A.: Organization and Science Committee.
APRIL 12.—Queensland Branch, B.M.A.: Council Meeting.
APRIL 16.—New South Wales Branch, B.M.A.: Medical Politics Committee.
APRIL 16.—New South Wales Branch, B.M.A.: Ethics Committee.
APRIL 16.—New South Wales Branch, B.M.A.: Clinical Meeting.
APRIL 17.—Western Australian Branch, B.M.A.: General Meeting.
APRIL 18.—Victorian Branch, B.M.A.: Executive Meeting.

◆

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

◆

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

MANLY DISTRICT HOSPITAL: HON. MEDICAL STAFF. Applications are invited to fill the following vacancies on the Honorary Medical Staff of the Manly District Hospital: (*a*) Two Honorary Consultant Physicians, One Honorary Consultant Surgeon. (*b*) One Honorary Physician, One Honorary Pædiatrician, Two Honorary Assistant Physician and Anæsthetist, Two Honorary Assistant Surgeon and Anæsthetist. Applications should be made in writing on the form provided and which is obtainable from the hospital; must state age, qualifications and experience, and be accompanied by copies of three credentials. It must be understood that any applicant for any particular position in group (*b*), if unsuccessful, will be regarded as an applicant for any other position in the same group, and will be required to accept if appointed thereto. Appointments are for a period of three years, when all members of the Honorary Medical Staff under the age of sixty years will be eligible for re-appointment for a similar period. Application forms may be obtained from, and when completed should be addressed to, the undersigned before April 10, 1946.—FRANK MEDDOWS, Secretary to the Board of Management.

SYDNEY HOSPITAL: JUNIOR RESIDENT PATHOLOGISTS. Applications, closing April 10, are invited for three appointments as Junior Resident Pathologists, to commence duty early in May. Initial appointment for 12 months, with salary at the rate of £390 p.a., plus board and lodgings. Apply Medical Superintendent for particulars and application forms.—A. F. BURRETT, Secretary.

WESTERN AUSTRALIAN PUBLIC SERVICE: ASSISTANT MEDICAL SUPERINTENDENT, WOOROLOO SANATORIUM.—Applications are invited for the above-mentioned position under the State Public Service Act. Applicants should have good general hospital experience and preference will be given to one with special knowledge in the treatment of tuberculosis. Nominal salary range £780 to £940, actual £840 to £1,000 (including cost of living adjustment, at present £60 per annum). Quarters provided for which rental charged. Stores obtainable at contract rates. Applications should be addressed not later than 31st March, 1946, to the undersigned.—S. A. TAYLOR, Public Service Commissioner.

BRISBANE AND SOUTH COAST HOSPITALS BOARD. — Applications are invited from duly qualified medical practitioners for the following positions on the full-time medical staff of the Brisbane Hospital: (1) Surgical Supervisor. (2) Orthopædic Supervisor. Applicants must state name in full, date of birth, and furnish full particulars of academical records. Commencing salary at the rate of £950, rising by annual increments of £50 to £1,200. Further particulars may be obtained from the Manager, Brisbane and South Coast Hospitals Board, Box 1458T, G.P.O., Brisbane, to whom applications should be addressed on or before 14th April, 1946.

X-RAY PLANT.—A Sydney radiologist is prepared to share his modern X-ray plant with any suitable person who is prepared to buy a half-share in same. Apply No. 23, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

MEDICAL OFFICER: PART TIME.—Manton & Sons Ltd. invite applications from legally qualified medical practitioners for appointment as medical officer to the company. Duties: to examine applicants for employment, to examine staff, to provide first-aid treatment to sick and injured employees, to advise the management of working conditions. Time: mornings only, 9.30 to 12.30, Monday to Saturday. Remuneration £500 per annum. Applications, addressed to the Secretary of the company, 236 Bourke Street, Melbourne, C.1, will be received until 30th March, 1946.

ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY. — Written applications with copies of testimonials are invited from legally qualified medical practitioners for appointment to the position of Assistant Medical Superintendent. Salary to accord with capabilities and experience, but not to be less than £800 per annum. Particulars and application forms are obtainable from the hospital. Applications to be addressed to the President of the hospital not later than Saturday, May 4, 1946.

SPEECH THERAPY.

Remedial Treatment for Reading, Writing, Speech and Voice Disorders.

MISS WRAY, A.S.S.T., London.

Speech Therapist to R.A.H.C., Sydney.

231 Macquarie Street, Sydney.
'Phone: B 4650.

OLD-ESTABLISHED PRACTICE suitable only for a keen, capable practitioner, in southern Queensland. The town has a cool climate, is the centre of a rich agricultural district and is progressing rapidly. Apply "Gyno", c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

FOR PRIVATE SALE, X-Ray Practice in convenient country centre. For further particulars apply XYZ, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

WANTED by ex-serviceman, Sydney suburban or outer suburban practice, income £2,000 to £3,000, cash buyer. Exchange attractive flat on North Shore line if necessary. Apply No. 104, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

PARTNERSHIP for ex-service man available in Sydney non-industrial seaside suburb. Apply No. 108, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, Sydney, N.S.W.

PERCIVAL D. OLLÉ

M.S.R., B.P.A., N.R. (Eng.),
PHYSIO-THERAPIST.

Short and Ultra-Short Wave, 6 to 20 Metres. At rooms only. Ultra-Violet, Infra-Red, Diathermy, Iontophoresis.

Physical injuries treated.

"Wembury",
42 Elizabeth Street, Ashfield.
Telephone: UA 1097.

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

SALES AND PURCHASE of Medical Practices negotiated.

LOCUM TENENS AND ASSISTANTSHIPS arranged.

SPECIAL CONSIDERATION AND ADVICE provided for ex-service Medical Officers.

FULL DETAILS ON APPLICATION

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: LF 3110.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance available in approved cases to facilitate transfers.

Telephones { **B 4159**
XA 2644 (After Hours) **Telegrams: "Locumtens Sydney".**

C. R. STRANGE,
Manager and Secretary.

Rx
Synephricol

A New, One Word Prescription for Coughs and Colds

Synephricol (Stearns) combines Codeine Phosphate and expectorants of time-proven effectiveness with Neo-Synephrine Hydrochloride as a non-toxic broncho-dilator.

Synephricol contains in each teaspoonful—

Codeine Phosphate	1/8 grain
Neo-Synephrine Hydrochloride	1/12 „
Potassium Guaiacolsulphonate	1 „
Ammonium Chloride	1 „
Menthol	1/65 „
Chloroform	1/4 minim
Alcohol	8%

SYNEPHRICOL
COUGH SYRUP
Stearns

Synephricol

CONTAINING NEO-SYNEPHRINE

FACTS ABOUT SYNEPHRICOL

SEDATIVE—Contains Codeine Phosphate (1 grain per ounce for its sedative effect).

EXPECTORANT—Ammonium Chloride and Potassium Guaiacolsulphonate provide safe, dependable expectorant action.

DECONGESTANT — Broncho-dilatation is produced by Neo-Synephrine Hydrochloride — non-toxic, orally active vaso-constrictor.

DOSAGE FORMS—Available in 4-oz., 16oz. and 80oz. bottles.

Frederick Stearns & Company
Division

SYDNEY, AUST.

AUCKLAND, N.Z. NEW YORK KANSAS CITY SAN FRANCISCO WINDSOR, ONTARIO DETROIT, U.S.A.

"I'll take a cake of **PROTEX** instead!"

A joke's a joke, but everybody knows that our boys are keen when it comes to picking qualities. That is why Protex is tops with the troops.

Protex, the safe antiseptic soap, with the fragrance of the Australian bushland, is an ideal family toilet soap. Protex helps to guard you against infection yet is very kind to even the most sensitive type of skin. One cake of Protex costs 4½d. and for economy buying, two cakes for 8½d.

PROTEX
ANTISEPTIC OIL GERMICIDAL SOAP

PX2

GOLD MEDAL, International Congress of Medicine, 1913

NOVOCAIN

Brand Ethocain
Hydrochloride.

THE ORIGINAL PREPARATION.
English Trade Mark No. 276477 (1905).
COCAINE-FREE Local Anæsthetic.

Throughout the war NOVOCAIN preparations have continued to be available in all forms, viz.:

Solutions in Ampoules, 1 oz. and 2 oz. Bottles, Stoppered or Rubber Capped. Tablets in various sizes and Powder.

Prices have been maintained at pre-war levels.

THE SAFEST AND MOST RELIABLE LOCAL ANÆSTHETIC.

Six to seven times less toxic than Cocaine.

Literature and Full Technique on Request.

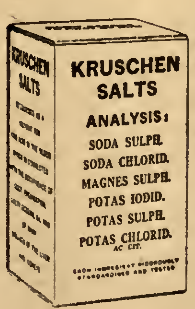
Sold Under Agreement.

THE SACCHARIN CORPORATION, Limited
84 MALFORD GROVE, SNARESBROOK, LONDON, E.18
Telephone: WANSTEAD 3287
Australian Agents: J. L. Brown & Co.,
123 William Street, Melbourne, C.1.

Swift Correction of Intestinal Stasis

Physicians know the far-reaching consequences which result from the condition of intestinal stasis, and realize that many symptoms, including cardiac asthma, neuritis, arthritis, gouty eczema, etc., may be removed by its relief.

While many aperients will give the necessary relief to the intestinal tract, in many cases this is accompanied by unpleasant and often serious after-effects. Saline purgatives sooner or later lose their effectiveness and more severe evacuants must be resorted to.


KRUSCHEN SALTS
KRUSCHEN SALTS
ANALYSIS:
SODA SULPH.
SODA CHLORID.
MAGNES SULPH.
POTAS IODID.
POTAS SULPH.
POTAS CHLORID.

Carefully controlled clinical tests conducted a few years ago in England established the value of a small regular dose of the simple mixture of salts in Kruschen Salts, in the prophylaxis and treatment of colon stasis and dyschezia.

Kruschen introduces healthy regularity and is neither injurious nor habit-forming.

KRUSCHEN SALTS

E. Griffiths Hughes Ltd. Established 1756.

Modernise your WILL

THE lives and the security of your family after your death will be affected more by your Will than by any other document you will ever sign.

Are you satisfied, for example, that the Executor you have appointed will have the time and energy and judgment to get the most out of your Estate for your family?

Modernize your Will. Have it soundly drawn under legal advice. Follow the modern practice and appoint Perpetual Trustee Company, Limited, as your Executor—conjointly with a friend, or relative, if you so desire. In this way you can ensure that your family will enjoy the maximum benefits of your Estate as you intend.

Write for a copy of the Company's interesting and informative booklet, "Your Executor and Trustee".

Perpetual Trustee Company Limited

DIRECTORS:

T. H. Kelly (Chairman), Hon. T. A. J. Playfair, M.L.C., E. R. Knox, H. Norman Pope, Allen C. Lewis, Hon. J. P. Abbott, M.H.R.

H. V. Douglass, Managing Director. A. G. Armytage, Manager.

Executor and Trustee, Agent under Power of Attorney for Absentees and others, Administrator, etc.

TRUST FUNDS UNDER ADMINISTRATION EXCEED £64,000,000

(the average estate being less than £10,000).

33-39 HUNTER STREET, SYDNEY

Southern and Riverina District Representative: D. A. Cormack, Gurwood Street, Wagga Wagga.
Western District Representative: H. A. Shaw, 140 Lord's Place, Orange.
Northern Districts Representative: F. T. B. Thomas, Queensland Insurance Building, Fitzroy Street, Tamworth.

GUARD YOUR PATIENT *further*

and let a firm with a staff of fully qualified chemists, using only the purest and freshest of drugs, dispense your prescription accurately. Even the rarest drugs are instantly available, and all drugs are tested in our own laboratories to make certain they conform to the British Pharmacopœia.

WASHINGTON H. SOUL PATTINSON & CO. LTD.

City, Suburbs and Newcastle

WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

Medical Practices, etc.

Medical.

1. Country practice in two-man town. Cash take average £1,900. Modern house to rent. Price: £1,400.

2. Southern city. Cash take average over 6 years £3,300. Residence to rent. Goodwill £3,000. Terms.

All Enquiries Confidential.

GOYDER, SON & CO.,

Medical Agents,

Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.

After Hours: JA 7202.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)

NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.

Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary.

MISS E. P. EVANS,

Manchester Unity Building, 185 Elizabeth Street, Sydney.

(MA 2031.)

QUEENSLAND INSTITUTE OF MEDICAL RESEARCH, BRISBANE.—Applications are invited for the position of Director of the above Institute. Subject to the general direction of the Council of the Institute, duties will be: (1) to direct research work and control and manage research staff of Institute; (2) to develop Institute on a comprehensive research basis; (3) to assist in planning permanent housing of Institute. Salary £2,000 per annum. Tenure is for seven years (subject to good conduct and efficient service) with eligibility for reappointment. Leave to visit other research centres and travelling expenses will be granted at discretion of Council. Appointee will be required to commence duty as early as possible in 1947. Applications close on 31st July, 1946, with the Secretary, Council of Queensland Institute of Medical Research, Box 917M, G.P.O., Brisbane, from whom intending applicants should obtain application forms and any further information required. The Institute has been recently established by the Queensland Government to undertake under the general control of a representative council research in any branches of medical science. It possesses at present only a skeleton staff and temporary accommodation. There is access to the hospitals of Brisbane (over 2,000 beds) and liaison with the University of Queensland.

FOR SALE, one Austox Gas and Oxygen Machine, D.M. model, suit dentist or obstetrician. £40. Sister Steedman, 457 Parramatta Road, Leichhardt, LM 3088.

Service for Doctors

Watson House, Bligh Street, Sydney.

Telephone: BW 4433.

No. 568.—N.S.W. base hospital town, general practice taking over £3,000, from surgery £1,250, mids. 50, few lodges. Large brick house to rent. Price goodwill £3,000. Terms available.

No. 600.—Queensland practice, prosperous country centre, opposition four, average takings £6,500, in vendor's hands 15 years. Large district hospital. Modern house to rent or purchase. Price goodwill £2,000.

No. 598.—Southern N.S.W. opposed practice taking over £3,500, from surgery approximately one-third, mids. 130. Price goodwill £2,500. Modern brick bungalow £2,500. Terms available.

No. 573. — Western Australian country centre taking over £4,500 p.a., mids. 100, appointments worth over £1,000. Price goodwill £3,000. Deposit £1,000, balance over 3 years. Large brick residence for sale or rent.

Assistant required for industrial practice close to Sydney. Salary £800 p.a., board and lodging and all expenses.

Locum tenens (part time) required for Sydney practice. Ten guineas weekly. Accommodation and breakfast. Suitable practitioner wishing to study post-graduate degree.

Particulars in Confidence.

WATSON VICTOR

LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Branches in all Capital Cities of Australia and New Zealand.

WOMEN'S HOSPITAL, CROWN STREET: HONORARY MEDICAL STAFF.—Applications are hereby invited for the following positions on the hospital staff: Honorary Obstetricians and Gynæcologists (4), Honorary Assistant Obstetricians and Gynæcologists (5) — one new appointment, Honorary Relieving Assistant Obstetrician and Gynæcologist—one new appointment, Honorary Ophthalmic Surgeon, Honorary Pædiatrician—one new appointment, Honorary Assistant Pædiatrician—one new appointment, Honorary Physician, Honorary Assistant Physician — one new appointment, Honorary Surgeon, Honorary Urologist, Honorary Ear, Nose and Throat Surgeon, Honorary Radiologist, Honorary Assistant Radiologist—one new appointment, Honorary Anæsthetists (2), Honorary Clinical Assistants to Out-Patients (10) — ten new appointments, Honorary Dentist. Honorary Medical Officers and Honorary Dentist will be appointed for 5 years, Honorary Assistant Medical Officers for 3 years and Honorary Clinical Assistants to the Out-Patient Department for 1 year. Copies of official application forms, *which must be used*, are obtainable at the office of the Secretary of the hospital. One such form, accompanied by copy of birth certificate and copies of testimonials in the case of applicants for vacant positions, must be returned to the Secretary of the hospital on or before 11th May, 1946. Envelopes containing applications must be endorsed: "Applications for the position of . . ."—R. J. Barrett, Secretary.

ST. VINCENT'S HOSPITAL, MELBOURNE, N.6.—Applications are invited from legally qualified medical practitioners for the undermentioned vacant honorary positions. Holders of new appointments made during the period of the war are advised that such appointments have been terminated. One Physician to In-Patients. Two Physicians to Out-Patients. One Surgeon to Out-Patients. Two Gynæcologists to In-Patients. Two Gynæcologists to Out-Patients. One Ophthalmic Surgeon. One Therapeutic Radiologist. One Diagnostic Radiologist. Two Dermatologists. All the above appointments will commence on 1st May, 1946, and will cease on 31st December, 1949. One Assistant Surgeon to the Orthopædic Clinic. One Assistant Surgeon to the Urological Clinic. One Assistant Surgeon to the Neurosurgical Clinic. Two Assistant Ophthalmic Surgeons. One Assistant Surgeon to the E.N.T. Clinic. Assistant Anæsthetists. All the above appointments will be for a term of three years, commencing 1st May, 1946. One Acting Physician in charge of Diabetic Clinic. One Acting Physician in charge of Neurological Clinic. The above appointments are temporary only and are terminable on one month's notice. Two Clinical Assistants to the Orthopædic Clinic. One Clinical Assistant to the Urological Clinic. One Clinical Assistant to the Neurosurgical Clinic. Two Clinical Assistants to the Dermatologist. Two Clinical Assistants to the Ophthalmic Surgeons. Three Clinical Assistants to the E.N.T. Surgeons. Twelve Clinical Assistants to the O.P. Physicians. Ten Clinical Assistants to the O.P. Surgeons. Four Clinical Assistants to the Diagnostic Radiologist. Two Clinical Assistants to the Therapeutic Radiologist. One Clinical Assistant to the Psychiatric Clinic. Two Clinical Assistants to the Gynæcological Clinic. The above appointments are for the term of one year commencing 1st May, 1946. Applications, accompanied by testimonials and evidence of qualifications, must be lodged not later than 4 p.m. on 3rd April, 1946, and be addressed to the Secretary, from whom application forms are available.—E. W. R. Grace, Secretary.

ANTI-TUBERCULOSIS ASSOCIATION OF N.S.W.—A vacancy has been created for an additional honorary radiologist for the Anti-Tuberculosis Association's Clinic, 169 Albion Street, Surry Hills. Applications are invited for this position, and, together with copies of testimonials, should be addressed to the General Secretary, 33 Macquarie Place, Sydney.

SYDNEY HOSPITAL: RESIDENT RADIOLOGIST.—Applications, closing April 6, are invited for appointment as Resident Radiologist. Initial appointment for 12 months, with salary at the rate of £440 p.a., plus board and lodging. Apply Medical Superintendent for particulars and application forms.—A. F. Burrett, Secretary.

CHIROPODY

MASTER CHIROPODIST.

Room 19, Fourth Floor, Challis House,
10 MARTIN PLACE, SYDNEY
'Phone BW 6642.

T. R. CHRISTIE,

Diploma Scientific Chiropody.

HALLAM

PTY. LTD.

Pharmaceutical Chemists

(Est. over 50 years)

Specialise in Dispensing the laboratory requirements of Physicians and Surgeons.

Microscopic Stains.

Intravenous Solutions.

Anæsthetics, etc.

•

Agents in New South Wales for all products of

Evans Sons Lescher & Webb Ltd., London

•

PHARMACIES NEAR MACQUARIE STREET:

168 King Street.
Corner Phillip & Bent Streets.
Corner Hunter & Elizabeth Streets.
63 Elizabeth Streets.

•

Head Office:

312 GEORGE STREET
(opposite Wynyard Station)

14 Pharmacies SYDNEY and SUBURBS

CAIRNS HOSPITALS BOARD: APPLICATIONS FOR MEDICAL SUPERINTENDENT, CAIRNS HOSPITAL. — Applications are hereby called for full-time Medical Superintendent for the Cairns Hospital. *Salary:* Commencing salary £1,000 per annum plus basic wage adjustments of £32 per annum and £25 northern allowance. Total: £1,057. In addition free residence, fuel and light are provided or £100 per annum in lieu, if such are not available. *Increments:* If satisfactory service has been rendered during the preceding twelve months, the salary is increased by £50 per annum, until the maximum of £1,250 is reached. The hospital is classified as a 130 bed hospital, with maternity ward averaging 16 patients per day. Applicants are to state age, if married or single, and when available for duty. Details of experience since qualifying, together with testimonials, are to be furnished. Applications close with the Chairman, Box 356, Cairns, on Wednesday, 3rd April, 1946. Show clearly on envelope: "Application—Medical Superintendent." In special circumstances, such as experience, if approved by department, appointee may be paid in excess of minimum scale.—E. Blackmore, Secretary, C.H.B.

DEALING DEATH TO THE AMEBA

Wherever in the world there are centers of population, there will be found amebic dysentery. *Endamoeba histolytica* preys indiscriminately on men, women, and children. Lodging in the intestine, this organism causes tissue destruction which gives rise to acute, subacute, and chronic amebiasis.

The amebae are present in the contents, in the mucosa, and in the submucosa of the colon. They must be destroyed in each of these locations.

Carbarsone, Lilly, attacks and kills the ameba in all three of these areas. It has a pronounced amebicidal action with relatively few side-effects in therapeutic doses. Carbarsone, Lilly, is less toxic and generally more effective in tolerated doses than similar arsenicals.

FOR THE PHYSICIAN'S PRESCRIPTION

Distributor:

CHARLES MARKELL COMPANY PTY., LIMITED

SYDNEY, N. S. W.

Eli Lilly International Corporation, *Indianapolis 6, Indiana, U. S. A.*

Wholly set up, pr[illegible]ted and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by Arthur Frederick Roots Simpson, of Fa[illegible]lm Street, Strathfield, New South Wales, on behalf of the Australasian Medical Publishing Company Limited, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

Rh 861

THE

MEDICAL JOURNAL

OF AUSTRALIA

Vol. I.—33rd Year. SYDNEY, SATURDAY, JUNE 22, 1946. No. 25.

"CREOSOTE"

"CREOSOTE" CAPSULES

Minims 1, 2, 3 and 5, in Tins of 25's and 100's

and "OSMO KAOLIN" (Morson)

A pure Colloidal Kaolin prepared by a special process of electro-osmosis.

from:

ALLEN & HANBURYS LTD., LONDON

are now obtainable in AUSTRALIA

Agents and Concessionaires:

HARRISONS RAMSAY PTY. LTD., 52 Clarence Street, SYDNEY

Cellona
TRADE MARK
PLASTER OF PARIS
BANDAGES

Gypsona
TRADE MARK
PLASTER OF PARIS
BANDAGES

CHANGE OF TRADE-MARK OF P.O.P. BANDAGES

After June 1st 'CELLONA' *Plaster of Paris Bandages may be supplied under the Trade-mark*

'Gypsona'

'CELLONA' technique in the treatment of Fractures, Tuberculous Conditions, Soft-tissue Injuries, Burns, etc., has world-wide application, but the use by T. J. Smith & Nephew of the trade-mark 'Cellona' is restricted to British territories. 'Gypsona' is the name under which these Plaster of Paris bandages are sold in non-British territories. In surgery, a universal product should have a universal trade-mark. Unification of the name 'Gypsona' will ensure immediate identification in all parts of the world.

While the change of trade-mark took place on 1st April in England, 'GYPSONA' consignments *may* not reach Australia for several months.

From now on, however, please order as 'GYPSONA'.

It is emphasised that the change is in name only. The quality and properties of the product will not be altered. It is made in England.

Gypsona

Trade Mark

PLASTER OF PARIS BANDAGES
WIDE MATERIAL AND SLABS

Wholesale Distributors:

MELBOURNE	Felton, Grimwade & Duerdins Pty. Ltd.
SYDNEY	Elliotts & Australian Drug Pty. Ltd.
ADELAIDE	A. M. Bickford & Sons Ltd.
PERTH	Felton, Grimwade & Bickford Ltd.
BRISBANE, ROCKHAMPTON AND TOWNSVILLE	Taylors, Elliotts Pty. Ltd.
HOBART AND LAUNCESTON, TASMANIA	L. Fairthorne & Son Pty. Ltd.
AUCKLAND, CHRISTCHURCH, DUNEDIN, WELLINGTON	Kempthorne, Prosser & Co.'s N.Z. Drug Co. Ltd.

T. J. SMITH & NEPHEW LTD., NEPTUNE STREET, HULL

FOR PRE-NATAL AND POST-NATAL NUTRITION...

NON IRRITATING
Enertone
VITAMIN ENRICHED
CEREAL FOOD
PRO-VITA PRODUCTS

Enertone

The hospital-tested cereal food rich in essential Vitamin B Complex and Minerals so vitally necessary in palatable and supplementary form for mother and infant during Pregnancy and Lactation.

ENERTONE is produced by the makers of famous PROVITA WEATHARTS.

VITAMIN-ENRICHED — PRE-DIGESTED — PLEASANT TO THE PALATE

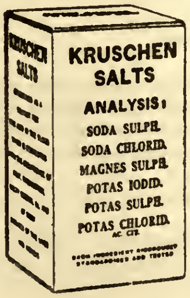
ENERTONE is obtainable from Chemists only—3/6.

PRO-VITA PRODUCTS, 422 COLLINS STREET, MELBOURNE, C.1

Swift Correction of Intestinal Stasis

Physicians know the far-reaching consequences which result from the condition of intestinal stasis, and realize that many symptoms, including cardiac asthma, neuritis, arthritis, gouty eczema, etc., may be removed by its relief.

While many aperients will give the necessary relief to the intestinal tract, in many cases this is accompanied by unpleasant and often serious after-effects. Saline purgatives sooner or later lose their effectiveness and more severe evacuants must be resorted to.


KRUSCHEN SALTS
KRUSCHEN SALTS
ANALYSIS:
SODA SULPH.
SODA CHLORID.
MAGNES SULPH.
POTAS IODID.
POTAS SULPH.
POTAS CHLORID.

Carefully controlled clinical tests conducted a few years ago in England established the value of a small regular dose of the simple mixture of salts in Kruschen Salts, in the prophylaxis and treatment of colon stasis and dyschezia.

Kruschen introduces healthy regularity and is neither injurious nor habit-forming.

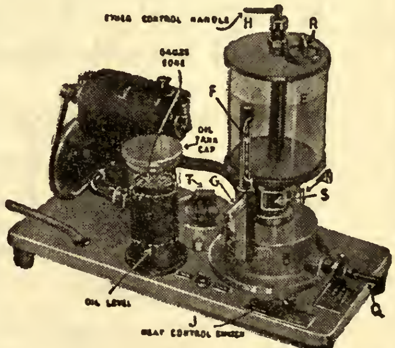
KRUSCHEN SALTS

E. Griffiths Hughes Ltd. Established 1756.

Clements' "Precision-Miniweight" Endotracheal Anæsthesia Apparatus

Very Light—Weight 16 lbs.

SALIENT POINTS



A. Accuracy of control of ether concentration which is unaffected by variation in temperature or inadvertent shaking of apparatus. *B.* Safety in use, no risk of liquid ether passing to patient. *C.* Quietness in use. *D.* Simplicity in manipulation. *E.* Long life with high efficiency. *F.* Easily carried, weighs only 16 lbs. (1) The Vaporiser provides a separate chamber for ether and air. (2) Ether dropping from upper glass chamber *E* through sight feed *S* (rate of drop controlled by handle *H*), into vaporiser chamber *B*—which has an electric heating element—is instantly vaporised as temperature is always maintained above 94° F. (boiling point of ether). This ensures very accurate control, a smooth anæsthetic, and safety, as there is never any liquid ether in vaporiser chamber *B*. (3) The Blower operates independently of centrifugal force and consequently runs at very slow speed, giving long life and high efficiency. (4) This slow speed makes it very quiet in operation.

H. I. CLEMENTS & SON

79 McLachlan Avenue, Rushcutter's Bay, Sydney.
Est. 1908. **FA 1478.**

Distributors: F. H. Faulding & Co. Ltd., Adelaide and Perth.
Surgical Manufacturing Co., Melbourne, Victoria.
Brisbane Machinery Co., Brisbane.

Scottish Taffeta Pyjamas

warm without bulk

The fine quality of woollen fabrics produced by the mills of Scotland is traditional, and these Taffeta Pyjamas are truly representative.

This wool and cotton mixture is light in weight yet warm; is cosy without bulkiness. Colours available are Bright Blue, Grey, Green or Maroon stripes.

Sizes: Men's, O.S. and X.O.S.

Price 55/- and 9 coupons.

The House of

PEAPES

Wynyard Station, George Street
(opposite Hunter Street)

Vitos

B COMPLEX OR SINGLE FACTORS ? IN VITAMIN THERAPY

The established interdependence of members of the vitamin B Complex often constitutes a limiting factor in successful sub-clinical vitamin therapy, where preparations providing only a single member of the Vitamin B Complex are prescribed.

Vitos is one of the richest known sources of Vitamin B_1, B_6 and E and also provides significant amounts of several other components of the B Complex, e.g., Riboflavin, Niacin and Pantothenic Acid, combined with 30% Protein of high biological value.

> Vitos Vitamin Abstracts.
> Williams, R. J. "Water Soluble Vitamins"
> Ann. Rev. Biochem, XII.
> *The complex relationship existing between the various components of the B complex is discussed with due stress being laid on the fact that the effects produced by any one member are often dependent on the supply of others.*

Prepared under scientific laboratory control and guaranteed to contain no synthetic vitamin admixture.

H. L. BUSSELL & CO. PTY. LTD.
20-32 MEAGHER STREET, SYDNEY

THREE IMPORTANT USES OF

1 Ten drops daily of Adexolin Liquid for the infant ensure normal dental and skeletal development and build up general resistance.

•

2 Twenty drops of Adexolin Liquid daily during pregnancy safeguard the mother against dental caries, the child against rickets, and both against infection.

•

3 Up to twenty drops of Adexolin hourly during the initial stages of fever, increase resistance. At the later stages, Adexolin in smaller doses supplies the fat-soluble vitamins lacking in low-fat diet.

ADEXOLIN

GL

★ Each c.c. of Adexolin Liquid contains 12,000 i.u. of vitamin A and 2,000 i.u. of vitamin D.

Available in 14 c.c. phials and 2 oz. bottles.

GLAXO LABORATORIES (AUST.) PTY. LTD.
Melbourne Sydney

Well-tried and successful dried milk foods, graded to suit bottle-feeding requirements from birth to weaning

GLAXO

NUMBER NUMBER
1 & 2

THE formula of Glaxo No. 1 approximates to that of human breast milk. Both the fat and protein content are diminished to suit the digestive capacity of the infant during the first months of life. It is also suitable for premature and weakly babies.

Glaxo No. 2 contains a higher proportion of fat and protein and is designed for the feeding of infants whose dietetic requirements are no longer satisfied by a fully humanised milk food.

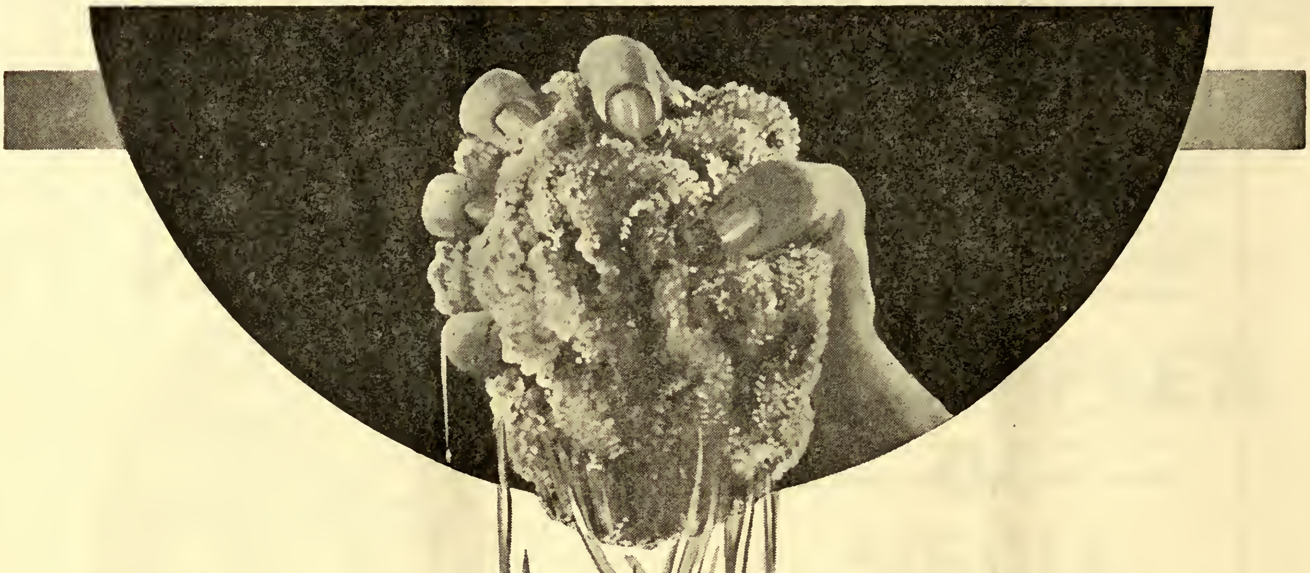
The simple change from Glaxo No. 1 to Glaxo No. 2 provides for the progressing needs of the growing infant without causing any digestive disturbance.

The declared content of vitamin D in Glaxo is a warrant that proper regard is paid to the importance of calcium metabolism. The incorporation of both vitamin D and iron in measured amounts provides factors which build not only for the present but for the future.

Constancy of composition and the greatest possible freedom from bacteria are accepted features of Glaxo.

Both forms of Glaxo are sold in sealed and dated tins in 1-lb. and 3-lb. sizes.

GLAXO LABORATORIES (AUST.) PTY. LTD., MELBOURNE AND SYDNEY



Like expelling water from a sponge

"Salyrgan" is extensively employed in the treatment of cardiac and cardiorenal œdema as well as in the dropsy of nephrosis. In most cases diuresis sets in promptly and the urinary output is satisfactorily high.

"Salyrgan" is preferably administered intravenously, but may also be given intramuscularly.

Available in boxes of ampoules.	5 x 1 c.c. 5 x 2 c.c. 10 x 2 c.c.

"SALYRGAN"

TRADE MARK

BRAND OF MERSALYL WITH THEOPHYLLINE

BAYER PHARMA PTY. LTD.

56 Young Street, Sydney

BAYER

DISTRIBUTORS: FASSETT & JOHNSON LTD., CHALMERS STREET, SYDNEY

THE MEDICAL JOURNAL OF AUSTRALIA

Vol. I.—33rd Year. SYDNEY, SATURDAY, JUNE 22, 1946. No. 25.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.
The Rh Blood Types and their Reactions, by J. J. Graydon and R. T. Simmons .. 861
Early Diagnosis in Tumours of the Central Nervous System, by W. Lister Reid .. 865
Studies in Nicotinic Acid, by Ross Wilson Hawker, M.B., B.S. .. 872
Acceptable Words: Quotations with a Medical Bearing, by J. B. Cleland .. 876
A Method for the Removal of Tonsils and Adenoids under Local Anæsthesia with the Patient in the Recumbent Position, by R. H. Bettington 882

REVIEWS—
A Year Book on General Surgery .. 883
Progress in Pædiatrics .. 884
Progress in Obstetrics and Gynæcology .. 884
Nutrition and Chemical Growth in Childhood .. 884

LEADING ARTICLES—
Cerebral Trauma and its Mechanisms .. 885

CURRENT COMMENT—
Diagnostic Methods in Cardiac Disease .. 886
The Placebo .. 887
The Prevention of Leakage after Intestinal Anastomosis .. 887

ABSTRACTS FROM MEDICAL LITERATURE—
Pathology .. 888
Morphology .. 889

MEDICAL SOCIETIES—
Melbourne Pædiatric Society .. 890

NAVAL, MILITARY AND AIR FORCE— Page.
Appointments .. 891
Casualties .. 891

CORRESPONDENCE—
Spinal Anæsthesia and Chloroform: A Comparison of Mortality .. 892
The National Health Service Bill of Great Britain 893
The Pharmaceutical Benefits Act, 1945 .. 893
Placenta Prævia .. 893
Honorary Medical Staffs .. 894
Research at the Kanematsu Institute .. 894
Trigeminal Neuralgia .. 895

UNIVERSITY INTELLIGENCE—
The University of Melbourne .. 895

POST-GRADUATE WORK—
Course in Clinical Pathology at Sydney .. 895

NOMINATIONS AND ELECTIONS .. 895

OBITUARY—
Robert Warren Crooke .. 895
Ernest John Frayne .. 895

AUSTRALIAN MEDICAL BOARD PROCEEDINGS—
Tasmania .. 895

NOTICE .. 896

BOOKS RECEIVED .. 896

MEDICAL APPOINTMENTS .. 896

DIARY FOR THE MONTH .. 896

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 896

EDITORIAL NOTICES .. 896

THE Rh BLOOD TYPES AND THEIR REACTIONS.

By J. J. Graydon and R. T. Simmons,
From the Commonwealth Serum Laboratories, Melbourne.

Landsteiner and Wiener (1940, 1941) described a new agglutinin which they found in the serum of rabbits immunized with the erythrocytes of the Rhesus monkey. The agglutinin reacted with the cells of about 85% of a sample of the white population of New York, independently of the blood groups or M,N types. The new property, which was designated "Rh" to indicate the manner in which it was discovered, would have aroused only passing interest had its discovery not been followed almost immediately by proof of its role in intragroup transfusion reactions (Wiener and Peters, 1940) and *erythroblastosis fœtalis* (hæmolytic disease of the newborn) (Levine *et alii*, 1941). Levine and Stetson (1939) had previously suggested that iso-immunization of the mother by foreign cellular antigen derived from the fœtus and inherited from the father was the cause of reactions following blood transfusions in a case they had investigated. Later, Levine (1942) showed statistically that the Rh factor was involved in about 90% of cases of hæmolytic disease of the newborn, and suggested that iso-immunization of the mother by fœtal antigen provided the key to the ætiology of this disease. The stimulus provided by these discoveries led to an intense study of the properties of the new factor resulting in a rapid accumulation of over 200 papers dealing with various aspects of its importance in clinical medicine, pathology, genetics and racial studies.

It was not long before it was discovered that various human anti-Rh sera did not give the same percentage of positive reactions (Levine *et alii*, 1941; Wiener, 1941). This proved that the Rh factor was not a single entity and led to the discovery of the various subtypes.

In England the importance of the Rh factor was quickly realized, and reports appeared in rapid succession confirming the part played by the Rh factor in the ætiology of hæmolytic disease of the newborn and in transfusion reactions. Almost simultaneously the story of the Rh subtypes was elucidated in the United States of America by Wiener and his associates, and by Race, Taylor and their associates in England, and it is from the many reports of these workers that our present knowledge of the Rh blood types has been obtained.

In our work in Australia we have to acknowledge that we have had the most generous cooperation and willingness to help with the supply of small quantities of the extremely rare Rh typing serum from Dr. A. S. Wiener, Dr. R. R. Race and the late Dr. G. L. Taylor.

Unfortunately the quantities of the subtype serum available have been necessarily small, so that we have been forced to restrict the number of blood samples tested for the Rh types in our racial studies in the south-west Pacific area.

The study of the Rh blood types was facilitated by the discovery by Levine and Javert (Levine, 1943) of a serum which reacted with all Rh-negative cells and certain Rh-positive cells. This serum was designated "Hr" to indicate its "reverse" relationship to the Rh factor. A similar but more potent serum was investigated by Race and Taylor (1943), and was named "St". Several other sera of the same specificity as the St serum have since been found.

Inheritance of the Rh Genes.

The actual mechanism of inheritance of the various Rh genes has not yet been completely established. The six-gene theory of Wiener (1943) affords satisfactory explanation of the majority of cases, but occasional exceptions are found which can be explained only by the assumption that there are one or two additional genes.

The theory that is most commonly accepted now is that suggested by Fisher (Race, 1944), who postulated the existence of eight allelic genes each associated with three antigens (or the existence of three loci so closely linked that they behave practically as a single entity). The three antigens associated with each gene may be any of six which react specifically with one only of six different kinds of serum (three kinds of Rh type serum and three of Hr type serum).

Fisher's theory predicted the existence of one new gene and two undiscovered Hr type sera, of which one has since been found. The Rhz gene (previously thought to be Rhy) has been identified by Murray, Race and Taylor (1945), and an additional Hr serum has been found and proved by Mourant (1945). The position is now that only one gene (Rhy), and one kind of anti-Hr serum, have yet to be discovered. The extra gene may have been encountered in our racial studies; but with the types of serum at present available we have no direct means of distinguishing between Fisher's Rhz and Rhy genes in the populations examined.

RH NOMENCLATURE.

With the rapid development of knowledge of the complex Rh factor simultaneously in different parts of the world, it was only natural that some confusion of terms and nomenclature should result. Several revisions of ideas have been necessitated by new discoveries; but it seems reasonable to suppose that Fisher's theory (which in any case may be easily extended should a new Rh type be identified) provides a fairly complete and practical description of the reactions of the various Rh blood types.

Several schemes have been suggested for the naming of the Rh genes and types, each of which has certain disadvantages. In an endeavour to achieve uniformity and if possible simplicity with regard to the Rh agglutinogens, and to provide guidance for the designation of any new blood factor that may be discovered, representative workers in various parts of the world have been asked to formulate rules for the naming of genes and to forward them, together with any other suggestions, to Dr. L. H. Snyder, of the United States of America, who has kindly undertaken to do the preparatory classifying prior to their consideration by an international committee.

In Table I are listed some of the suggested schemes for the nomenclature of the Rh genes and the reactions of these genes with the six specific sera.

Let us consider the advantages and disadvantages of each suggested nomenclature in turn.

1. Wiener's nomenclature has a right in priority. Its chief disadvantage is that it does not absolutely describe the reactions determined by the genes with the six types of antiserum. It is inconsistent in using both subscripts and superscripts, and, moreover, it is a little confusing in the use of Rh′ and Rh$_1$ for different genes. The terms "Rhy" and "Rhz" were first used by Race and his collaborators and have now been adopted by Wiener.[1]

2. Snyder's nomenclature is fairly simple and consistent in the use of superscripts only. It forecasts the reactions with the antisera for the six genes named. The only disadvantage is the retaining of the rather clumsy "prime" and "double prime" usage. Its main purpose, however, was to achieve uniformity in the use of superscripts only.

3. Race's (and Fisher's) nomenclature differs from Wiener's only in that "h" has been omitted from the "Rh". Wiener's nomenclature has been used in England to avoid confusion. The letters *C*, *D*, *E*, *c*, *d*, *e* and the Greek symbols Γ, Δ, Η, γ, δ, η were not advanced as a suggested nomenclature, but were intended mainly to illustrate Fisher's theory, and in this respect they are of great value.

4. Murray's nomenclature is simple and systematic in respect of the genes, and it indicates the reactions to be expected with the six types of serum. It becomes unwieldy for phenotypes and is difficult to memorize.

5. The suggested nomenclature is simple, consistent and systematic. It indicates the reactions of the genes with the type antisera without ambiguity, and it is easily memorized. The "h" of the Rh has been dropped for simplicity in naming the genes and to provide a means of differentiating between genes and phenotypes. It is considered desirable to retain the "Rh" in full for the phenotypes to conform to usage; but there is no clinical danger in departing from the earliest designation for the Rh genes.

Extension of Suggested Nomenclature Number 5.

The reversed letters "Rh" and "Hr" might well be retained for the antisera to indicate the reverse manner in which these sera react. For example, anti-Rh^1 serum reacts only with genes the designations of which include the superscript "1"; anti-Hr^1 serum reacts only with those genes the designations of which do not include the superscript "1".

The Rh Genes.

Perusal of Table I will show that the reactions of each of the genes with all six types of serum may be obtained without ambiguity from their designation.

The genes react only with the anti-Rh sera referred to in their superscripts. With the anti-Hr sera they react

---

[1] Throughout this paper we have referred to "the reactions of genes", in lieu of the more precise term "reactions of the antigens determined by the genes". It should be noted also, that the "Rh genes" are probably a combination of three or more closely linked genes.

TABLE I.

The Rh Genes and their Reactions with Antisera.

Nomenclature of Genes According to					Reactions with Antisera.						Author.
					Δ	Γ	Η	δ	γ	η	Fisher.(5)
					D	C	E	d	c	e	Race.(5)
					3	1	2	6	4	5	Murray.(5)
					Anti-Rh$_0$	Anti-Rh′	Anti-Rh″	Anti-Hr$_0$	Anti-Hr′	Anti-Hr″	Wiener.(1)
Wiener(1)	Synder(2)	Race *et alii*(3) and Fisher(6)	Murray(4)	Graydon and Simmons	Anti-Rh^0	Anti-Rh^1	Anti-Rh^2	Anti-Hr^0	Anti-Hr^1	Anti-Hr^2	Graydon and Simmons.
rh	rh	R cde	Rh456	r (or R)	–	–	–	+	+	+	
Rh$_0$	Rh^0	R″ cDe	Rh345	R^0	+	–	–	–	+	+	
Rh′	Rh′	R′ Cde	Rh156	R^1	–	+	–	+	–	+	
Rh″	Rh″	R″ cdE	Rh246	R^2	–	–	+	+	+	–	
Rh$_1$	Rh$^{0\prime}$	R$_1$ CDe	Rh135	R^{01} (Orally, R "oh one")	+	+	–	–	–	+	
Rh$_2$	Rh$^{0\prime\prime}$	R$_2$ cDE	Rh234	R^{02}	+	–	+	–	+	–	
Rhy		Ry CdE	Rh126	R^{12}	–	+	+	+	–	–	
Rhz		Rz CDE	Rh123	R^{012}	+	+	+	–	–	–	

The Rhy gene and the anti-Hr^0 serum have yet to be discovered.

(1) A. S. Wiener, 1945.

(2) L. H. Snyder, 1945.

(3) R. R. Race, G. L. Taylor, E. W. Ikin and A. M. Prior, 1944.

(4) J. Murray, 1944.

(5) R. R. Race, 1944.

(6) Alongside the symbols used by Race *et alii*, we have listed their analytical equivalents in terms of the elementary antigens designated by those authors as *D*, *C*, *E*, *d*, *c*, *e* reacting with the antisera Rh^0, Rh^1, Rh^2, Hr^0, Hr^1 and Hr^2 respectively.

only with those not mentioned in the superscripts. For example, gene R^{02} (pronounced R "oh two") reacts with anti-Rh^0 serum and anti-Rh^2 serum, but not with anti-Rh^1 serum. Gene R^{02} reacts with anti-Hr^1 serum, but not with anti-Hr^0 or anti-Hr^2 serum. Thus the designation R^{02} determines the reactions of the gene so called with each of the six types of serum. This notation automatically indicates the composition of each gene in terms of the hypothetical elementary antigens required by Fisher's theory. For example, gene R^{02} might be written $R^{02}H^1$ and the genotype $R^{01}r$ (Fisher's *CDe/cde*) might readily be expanded to R^{01} H^2/H^{012}.

The Rh Phenotypes.

Now let us see how this terminology may be applied to the Rh phenotypes, the "h's" being retained to distinguish the phenotypes from the genes. In Table II the proposed scheme is compared with Wiener's, which has been used in the majority of the published papers dealing with the Rh blood types. Wiener's nomenclature does not indicate fully the reactions of the phenotypes with anti-Rh type sera or with the anti-Hr type sera. The proposed designations are completely descriptive of the reactions of the cells in respect of the anti-Rh sera, but are not adequate with regard to the reactions with the anti-Hr sera. With one exception, all the phenotypes include at least two types of cells which give different reactions with one or more of the anti-Hr sera. These ambiguous reactions are due to the inclusion in the phenotypes of more than one genotype. There are 36 possible genotypes, and these are distributed numerically among the phenotypes in the following way: 1, 2, 2, 2, 5, 5, 5, 14 in the order given in Table II.

TABLE II.

The Rh Phenotypes and their Reactions with Antisera.

Phenotype.		Reaction with Anti-Rh Sera.			Possible Genotypes[2] (Using the Suggested Nomenclature of Graydon and Simmons).	Reactions with Anti-Hr Sera.		
Graydon and Simmons.	Wiener.[1]	Anti-Rh^0.	Anti-Rh^1.	Anti-Rh^2.		Anti-Hr^0.	Anti-Hr^1.	Anti-Hr^2.
Rh-negative (rh)	Rh-negative	−	−	−	rr	+	+	+
Rh^0	Rh_0	+	−	−	R^0R^0 R^0r	− +	+ +	+ +
Rh^1	Rh′	−	+	−	R^1R^1 R^1r	+ +	− +	+ +
Rh^2	Rh″	−	−	+	R^2R^2 R^2r	+ +	+ +	− +
Rh^{01}	Rh_1	+	+	−	$R^{01}R^{01}$ $R^{01}R^0$ $R^{01}R^1$ $R^{01}r$, R^0R^1	− − + +	− + − +	+ + + +
Rh^{02}	Rh_2	+	−	+	$R^{02}R^{02}$ $R^{02}R^0$ $R^{02}R^2$ $R^{02}r$, R^0R^2	− − + +	+ + + +	− + − +
Rh^{12}	Rh′Rh″	−	+	+	$R^{12}R^{12}$ $R^{12}R^1$ $R^{12}R^2$ $R^{12}r$, R^1R^2	+ + + +	− − + +	− + − +
Rh^{012}	Rh_1Rh_2	+	+	+	$R^{012}R^{012}$ $R^{012}R^{01}$ $R^{012}R^{02}$ $R^{012}R^{12}$ $R^{012}R^0$, $R^{01}R^{02}$ $R^{012}R^1$, $R^{01}R^{12}$ $R^{012}R^2$, $R^{02}R^{12}$ $R^{012}r$, R^0R^{12}, R^1R^{02}, R^2R^{01}	− − − + − + + +	− − + − + − + +	− + − − + + − +

---

(1) Since the preparation of this paper and Tables I, II and IIA, Wiener (personal communication) has advised us of two changes in his phenotype nomenclature; Rh-negative becomes rh, and Rh_0 becomes rh_0. In his genotype nomenclature he has dropped the "h" and he now uses superscripts only, for example, rr, R^1R^1, R^2r^0 *et cetera.*

(2) This includes the genotypes for the rare gene Rhz (R^{012}) and the predicted gene Rhy (R^{12}), also the reactions with the predicted anti-Hr serum.

TABLE IIA.

Phenotype.		Reaction with Antisera.				Possible Genotypes.
Graydon and Simmons.	Wiener.	Anti-Rh^0.	Anti-Rh^1.	Anti-Rh^2.	Anti-Hr^1.	
Rh-negative (rh)	Rh-negative	−	−	−	+	rr
Rh^0	Rh_0	+	−	−	+	R^0R^0, R^0r
Rh^1	Rh′	−	+	−	− +	R^1R^1 R^1r
Rh^2	Rh″	−	−	+	+	R^2R^2, R^2r
Rh^{01}	Rh_1	+	+	−	− +	$R^{01}R^{01}$, $R^{01}R^1$ $R^{01}r$, $R^{01}R^0$, R^0R^1
Rh^{02}	Rh_2	+	−	+	+	$R^{02}R^{02}$, $R^{02}R^2$, $R^{02}r$, $R^{02}R^0$, R^0R^2
Rh^{12}	Rh′Rh″	−	+	+	− +	$R^{12}R^{12}$, $R^{12}R^1$ $R^{12}R^2$, $R^{12}r$, R^1R^2
Rh^{012}	Rh_1Rh_2	+	+	+	− +	$R^{012}R^{012}$, $R^{012}R^{01}$, $R^{012}R^{12}$, $R^{012}R^1$, $R^{012}R^{12}$ $R^{01}R^{02}$, $R^{01}R^2$, $R^{02}R^1$, $R^{012}R^{02}$, $R^{012}R^0$, $R^{012}R^2$, $R^{012}r$, $R^{02}R^{12}$, $R^{12}R^0$

It is not considered that any more detailed and descriptive terminology for the phenotypes would be justified, as the one suggested completely outlines the reactions with the three known anti-Rh sera. The extension of the nomenclature of the phenotypes in order to give the reactions with all six types of serum (the letter "H" with suitable superscripts could be used for this purpose) would require 27 different designations, and even these would not be enough to determine all of the genotypes involved. There would still be six phenotypes with two genotypes each and one phenotype with four possible genotypes (see Table II).

One desideratum in the naming of human phenotypes, particularly those of clinical importance, is that the terminology adopted should not be cumbersome when used orally. This is an important disadvantage in the "capital *C*—small c" usage. In our suggested series Rh^{01} is pronounced Rh "oh one".

Because superscripts and subscripts cannot be readily distinguished when spoken, superscripts have been adhered to throughout. (The generally accepted practice in modern genetics is to use superscripts only for alleles occupying the same locus.)

The comments which have been made on Wiener's nomenclature for the genes apply equally well to his phenotypes. In addition it is pointed out that Wiener's "double acting" phenotypes $\text{Rh}'\text{Rh}''$ and Rh_1Rh_2 may be confused with genotypes. One would naturally expect the Rh_1Rh_2 phenotype to contain a double dose of the Rh^0 antigen, as it appears to be a combination of the Rh_1 and Rh_2 genes, both of which contain the Rh^0 antigen. This is the case only with some of the cells classed in the Rh_1Rh_2 phenotype.

The Rh Antisera.

In the naming of the anti-Rh sera, the designations of Wiener have been adhered to except in the substitution of the superscripts "1" and "2" for the "prime" and "double prime" respectively, and in the use of the superscript "0" in "anti-Rh^0". No other alteration appears to be desirable. The use of numbers 1 to 6 as suggested by Murray could be justified only if his genetic terminology, which is not generally favoured, was accepted.

The Greek letters suggested by Fisher seem to introduce an additional factor confusing to many workers. The letters *C*, *D*, *E* and *c*, *d*, *e* are rather cumbersome when used orally. However, it seems to us that six only of the twelve symbols are necessary, for the antisera might be satisfactorily identified by the use of "anti-" preceding the name of the corresponding antigen—for example, *D* and anti-*D*, and Δ (or δ) and anti-Δ (or δ) for the corresponding Hr serum; or, if preferred, *D* and anti-*D*, and *d* and anti-*d*. If it was shown that the six antigens collectively known as the Rh factor were actually associated with three loci which are not completely linked, it might be desirable to continue the use of such letters (*C*, *c*, *D*, *d*, *E*, *e*), which have a definite advantage when one is describing such factors as the "Willis" antigen reported by Callender *et alii* (1945).

Rh antisera which react in the same way as the original anti-rhesus serum of Landsteiner and Wiener have generally been referred to as standard anti-Rh sera. It is suggested that the term "standard" is no longer necessary in this connexion, and may for reasons given below lead to confusion.

The Hr Antisera.

Wiener (1945) has also proposed that Hr antisera which give the same specific reactions as Race and Taylor's "St" serum should be referred to as standard anti-Hr sera, priority thus being given to the Hr name of Levine and Javert (Levine, 1943). There seems to be no need to use the term "standard", and it may cause confusion for the following reasons: (i) There is no reciprocal relationship between the so-called "standard Rh antiserum" and the "standard Hr antiserum", the former being anti-Rh^0 and the latter anti-Hr^1 serum. (ii) The term "standard" may well be required for use when Rh and Hr sera are placed on a suitable basis with regard to potency. It may eventually be possible to prepare standard sera, either in liquid or in dried form, with which the potency of other Rh and Hr antisera can be compared.

In naming the anti-Hr sera we have used superscripts as in the corresponding anti-Rh sera; thus we have "anti-Hr^0", "anti-Hr^1" and "anti-Hr^2" respectively.

THE REACTIONS OF GENES WITH RH AND HR ANTISERA.

From Table I it may be seen that each gene reacts either with a particular anti-Rh serum or with its corresponding Hr antiserum, but never with both. This fact has been utilized by Wiener (1945) in a neat method evolved for forecasting the percentage of positive reactions which any particular Hr type of serum will give in a homogeneous population, when the percentage of positive reactions with the corresponding Rh type serum is known.

Each anti-Rh and anti-Hr serum pair react in much the same way with blood samples as do the M and N type antisera, and the cells can thus be classified as homozygous or heterozygous with respect to this pair; for example, anti-Rh′ serum and anti-Hr′ serum may be used to test a number of samples of cells, and from their reactions three groups may be obtained—namely, those reacting with anti-Rh′ serum only, those reacting with both antisera and those reacting with anti-Hr′ serum only. The statistical treatment of these reactions is identical with that for the M,N system. It may be easily deduced (formula (I)) that:

$$\text{Hr}' + = 1 - (1 - \sqrt{\text{Rh}'-})^2$$

Thus, from a knowledge of the percentage of positive reactions given by any anti-Rh serum in a homogeneous population, the percentage of positive reactions given by the corresponding Hr antiserum may be calculated (see Table III).

TABLE III.

Showing the Expected Percentage of Positive Reactions with any Hr Antiserum when the Percentage of Positive Reactions with the Corresponding Rh Antiserum is Known (or Vice Versa).

Rh+	Hr+	Rh+	Hr+	Rh+	Hr+
100	—	90	53	80	69
99	19	89	55	79	71
98	26	88	57	78	72
97	33	87	59	77	73
96	36	86	61	76	74
95	40	85	62 (5)	75	75
94	43	84	64		
93	46	83	65 (5)		
92	49	82	67		
91	51	81	68		

It is obvious from Table III that formula (I) is of little value in predicting reactions of Hr serum when the percentage of positive reactions with the Rh serum is greater than 95%. Conversely, if the percentage of positive reactions is comparatively low with the Rh serum, the percentage of positive reactions with the Hr serum can be accurately forecast. The same statistical tests used for the M,N system may be applied to the three separate Rh-Hr systems, for it is easy to show that $\sqrt{\text{Rh}'-} + \sqrt{\text{Hr}'-}$ should be equal to 1·0, and its deviation from unity in any particular sampling has the standard error

$$\sigma_D = \frac{1}{2\sqrt{V}}$$

where *V* is the number of samples examined. The values of *D* and σ_D have been calculated for some of the published and unpublished data on different races, and are given in Table IV, from which it may be seen that the figures fit the theory remarkably well.

To date, Fisher's theory has proved adequate in explaining the genetic relationships of the Rh agglutinogens; but as knowledge of this complex genetic system is extended, it may become necessary to modify these conceptions. It is, therefore, important that the notation finally adopted should be simple, descriptive and capable of extension. The nomenclature suggested in the foregoing fulfils these requirements, and further, its departure

TABLE IV.

Application of the Statistical Tests to the Percentage of Positive Reactions Obtained in the Rh^1-Hr^1 System in Various Races.

Population Studied.	Authors.	Number of Samples Tested.	Percentage of Positive Reactions with Antisera.		D	σ_D	D/σ_D
			Anti-Rh^1.	Anth-Hr^1.			
Australian whites	Simmons *et alii* (1945).	225	72·4	76·0	0·015	0·03	0·5
English	Fisher and Race (1946).	927	69·26	80·15	0·00002	0·017	<0·1
Mexican Indians	Wiener *et alii* (1945).	95	89·5	55·8	0·01	0·05	0·2
Papuans	Simmons *et alii* (1946).	100	100·0	8·0	0·04	0·05	0·8
Indonesians	Present authors (in preparation).	100	96·0	33·0	0·02	0·05	0·4
Fijians	Present authors (in preparation).	110	98·2	29·1	0·02	0·05	0·4
Melanesians (Admiralty Islands)	Present authors (in preparation).	112	99·1	12·5	0·03	0·05	0·6
American whites	Wiener (personal communication).	645	69·0	79·3	0·012	0·02	0·6

from the original suggestions of Wiener all tend to aid the novice in understanding the reactions of the system, while the changes made present no difficulties to those familiar with the genetics of Rh.

SUMMARY.

1. A brief descriptive introduction covering certain milestones in the development of knowledge of the Rh blood types is given.

2. The reactions of the eight Rh genes and of eight of the Rh phenotypes with the six type antisera are presented in tabular form. The possible genotypes pertaining to each phenotype are also given.

3. A suggested scheme for the nomenclature of the Rh genes, phenotypes and type specific antisera is proposed. This scheme is held to be simple, easily memorized, unambiguous in oral use and descriptive of the reactions of the genes with the type-specific antisera.

4. Some statistical considerations relating to the Rh and Hr systems in racial studies are discussed.

BIBLIOGRAPHY.

S. Callender, R. R. Race and Z. V. Paykoc: "Hypersensitivity to Transfused Blood", *British Medical Journal*, Volume II, July 21, 1945, page 83.

R. A. Fisher and R. R. Race: "Rh Gene Frequencies in Britain", *Nature*, Volume CLVII, January 12, 1946, page 48.

K. Landsteiner and A. S. Wiener: "An Agglutinable Factor in Human Blood Recognized by Immune Sera for Rhesus Blood", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XLIII, 1940, page 223; "Studies on an Agglutinogen (Rh) in Human Blood Reacting with Anti-Rhesus Sera and Human Isoantibodies", *The Journal of Experimental Medicine*, Volume LXXIV, 1941, page 309.

P. Levine and R. E. Stetson: "An Unusual Case of Intragroup Agglutination", *The Journal of the American Medical Association*, Volume CXIII, 1939, page 126.

P. Levine, L. Burnham, E. M. Katzin and P. Vogel: "The Role of Isoimmunization in the Pathogenesis of Erythroblastosis Fetalis", *American Journal of Obstetrics and Gynecology*, Volume XLII, 1941, page 925.

P. Levine: "The Pathogenesis of Fetal Erythroblastosis", *The New York State Journal of Medicine*, Volume XLII, 1942, page 1928; "The Pathogenesis of Erythroblastosis Fetalis", *The Journal of Pediatrics*, Volume XXIII, 1943, page 656.

A. E. Mourant: "A New Rhesus Antibody", *Nature*, Volume CLV, 1945, page 542.

J. Murray: "A Nomenclature of Subgroups of the Rh Factor", *Nature*, Volume CLIV, December 2, 1944, page 701.

J. Murray, R. R. Race and G. L. Taylor: "Serological Reactions Caused by the Rare Gene Rh_z", *Nature*, Volume CLV, 1945, page 112.

R. R. Race and G. L. Taylor: "A Serum that Discloses the Genotype of some Rh-Positive People", *Nature*, Volume CLII, 1943, page 300.

R. R. Race: "An 'Incomplete' Antibody in Human Serum", *Nature*, Volume CLIII, 1944, page 771.

R. R. Race, G. L. Taylor, E. W. Ikin and A. M. Prior: "The Inheritance of Allelemorphs of the Rh Gene in Fifty-Six Families", *Annals of Eugenics*, Volume XII, 1944, page 206.

R. T. Simmons, Rachel Jakobowicz and G. A. Kelsall: "The Rh Factor: A Survey of the Subtypes of White Australians", THE MEDICAL JOURNAL OF AUSTRALIA, December 29, 1945, page 493.

R. T. Simmons, J. J. Graydon and E. F. Woods: "Further Observations on the Rh and Hr Factors, and the Blood Group Frequencies in Papuans", THE MEDICAL JOURNAL OF AUSTRALIA, April 20, 1946, page 537.

L. H. Snyder: "The Nomenclature of the Rh Blood Types", *Science*, Volume CI, January 19, 1945, page 62.

A. S. Wiener and H. R. Peters: "Hemolytic Reactions following Transfusions of Blood of the Homologous Group, with Three Cases in which the Same Agglutinogen was Responsible", *Annals of Internal Medicine*, Volume XIII, 1940, page 2306.

A. S. Wiener: "Hemolytic Reactions following Transfusions of Blood of the Homologous Group", *Archives of Pathology*, Volume XXXII, 1941, page 227; "Genetic Theory of the Rh Blood Types", *Proceedings of the Society for Experimental Biology and Medicine*, Volume LIV, 1943, page 316; "Theory and Nomenclature of the Hr Blood Factors", *Science*, Volume CII, November 9, 1945, page 479.

A. S. Wiener, J. P. Zepeda, E. B. Sonn and H. R. Polivka: "Individual Blood Differences in Mexican Indians, with Special Reference to the Rh Blood Types and Hr Factor", *The Journal of Experimental Medicine*, Volume LXXXI, 1945, page 559.

EARLY DIAGNOSIS IN TUMOURS OF THE CENTRAL NERVOUS SYSTEM.

By W. LISTER REID,
Sydney.

TUMOURS of the central nervous system have always been the most serious problem that is presented to the neurosurgeon, and by the term tumour I mean all types of expanding lesion, such as neoplasm, abscess, cyst, hæmorrhage and the like. It was not so many years ago that tumours of the central nervous system, especially neoplasms, were regarded by surgeons as lesions of considerable clinical and pathological interest, but purely from an academic point of view. Those who were courageous enough to attempt removal had an extremely high operative mortality rate. As a result of the pioneering work of Harvey Cushing and his colleagues, the operative removal of cerebral and spinal tumours became a definite science and mortality figures dropped from the 80% to 90% mark to 10% to 15%. This remarkable reduction was mainly due to more accurate methods of localization, such as encephalography, to a greater knowledge of neuropathology, and to improved methods of operative technique, so that previous methods of opening the skull on chance were no longer necessary.

The next and more important step in the progress of neurosurgery was to convince the medical profession that neurosurgery with regard to tumours was no longer a eulogistic fugue on the part of a few enthusiastic visionaries, but a very real procedure that could rehabilitate many of these patients for varying periods of time, according to the nature and site of the lesion. This object has largely been achieved. With the aid of experience, further improvements in methods of localization and operative technique, and a greater knowledge of neuroanatomy, neurophysiology and neuropathology, we have been able to reduce the operative mortality rate to about 4% to 5% and the total case mortality rate to 10% to 15%.

On going through my own records I have noticed one outstanding point. In practically every case in which death occurred, the patient exhibited advanced signs of increased intracranial pressure by the time he was admitted to hospital. In some instances an operation was performed merely in the rather forlorn hope that some improvement might be obtained. In others any attempt at operative removal of the lesion was regarded as being out of the question. In a number of these cases it was apparent that, had the lesion been recognized years, months or even weeks earlier, temporary or permanently good results could have been obtained. And this point brings me to the object of presenting this paper and the vital necessity for early recognition of any type of expanding lesion of the central nervous system. This is, of course, applicable to practically all bodily tumours; but whereas a lesion may expand to an enormous size in other parts of the body without interfering with function, the central nervous system is enclosed within a bony compartment—namely, the skull and spinal column—which is solid and contains very little free space to accommodate extraneous growths of an expansile nature. Consequently, after a certain stage, further expansion of the lesion must take place at the expense of the normal cranial or spinal contents either by displacement or replacement.

In presenting this paper I have very little that is new or original to offer, nor do I write with the object of exhibiting my limited knowledge and neurosurgical results. I realize the difficulties of the general physician and surgeon, who must keep abreast with the times in all branches of medical literature, with the result that the relatively uncommon surgical lesions of the central nervous system must often take a back seat in favour of the more common bodily diseases. Also, I do sincerely request that those readers who have paid me the compliment of referring to me the cases presented do not regard this paper in the light of a destructive criticism. It is written purely as an effort to present the more important symptoms and signs of intracranial expanding lesions in an abbreviated form, so that it may assist the practitioner to recognize the presence of these lesions as soon as possible after the onset of the symptoms.

These symptoms and signs can be roughly divided into two main groups. General symptoms and signs, such as headache, lassitude, drowsiness and papillœdema, are usually the result of increased intracranial pressure. Focal symptoms and signs, such as paralysis, ataxia, dysphasia and anæsthesia, are usually due to direct involvement of the central area controlling these functions or of the cerebro-spinal pathways. General symptoms are of value in suggesting or indicating the presence of an expanding lesion of the central nervous system, while focal symptoms or signs aid in the localization of such a lesion to one particular part. The old triad of headache. vomiting and papillœdema is truly an indication of increased intracranial pressure, but at this stage it is frequently too late to attempt any surgical removal. Tumours of the spinal cord rarely attain a large size before producing fairly definite localizing symptoms and signs; but such lesions may exist and expand to relatively large proportions in certain areas of the brain without causing the patient any discomfort.

In the following case a perfect result was obtained in spite of the relatively long history. This was mainly due to the fact that there was no evidence of cerebral dysfunction as the result of increased intracranial pressure.

CASE I.—Mr. B.B., aged forty-two years, complained of a small lump in his right frontal region. This lump had been present for eighteen months and was gradually increasing in size and had become tender during the past three days. Flat X-ray plates were sufficient to confirm the original impression of a meningioma. At operation the tumour measured about 5·5 centimetres in diameter and occupied the whole of the right frontal area, having displaced the brain backwards. Although the tumour tissue had invaded and filled the frontal sinus, a complete removal was possible, and the patient made an uninterrupted recovery and was ready for discharge from hospital on the tenth day.

Obviously, in such cases it may be impossible even to suspect the presence of a tumour, so it is all the more vital that such a lesion should be detected soon after the appearance of the first outward sign. In the case of any expanding lesion, irrespective of its pathological nature or of what the early symptom or sign may be, the point that gives us the greatest concern is the progressive nature of that symptom or sign. A good rule to follow is to regard any neurological symptom or sign that becomes progressively worse as a definite indication for further specialized investigation. In the following paragraphs are set out in an abbreviated form the main features of the usual procedure that is carried out in the investigation of neurological conditions.

Subjective Symptoms.

A careful history will often suggest the possibility of an intracranial expanding lesion. Particular attention should be paid to the length of time for which the symptoms have been present and whether they are becoming progressively worse. The age of the patient is important, as progressive symptoms commencing in later life are more suggestive of an expanding lesion than those starting in youth. Conversely, symptoms that have been present for many years and which are not progressive in nature are not likely to be associated with a tumour. If there is the slightest doubt, it is always wise to protect oneself by having ventricular air studies carried out so that a tumour can be excluded.

Headache.

Headache is one of the earliest symptoms associated with intracranial and sometimes with intraspinal tumours. It may result from increased intracranial pressure or from direct pressure by the lesion on one or other of the pain-sensitive structures within the skull. Pain-sensitive structures above the tentorium are supplied from the trigeminal (or fifth cranial) nerves, the fibres from which mainly accompany the larger blood vessels. These pain-sensitive structures are the internal carotid arteries and their larger branches, the meningeal arteries, the dural blood sinuses and the larger cortical veins as they approach the sinuses, while the dura proper and the brain substance are quite insensitive. Consequently, headache arising from a lesion above the tentorium is referred to the anterior half of the head in front of a vertical plane through the ears. Infratentorial structures receive their nerve supply from the glosso-pharyngeal and vagus (or ninth and tenth cranial) nerves and possibly from the upper three cervical nerves, so that lesions below the tentorium may produce headache which is referred to the posterior half of the head behind the vertical plane through the ears. Thus it can be seen that headache is rarely of assistance as a localizing sign unless it is unilateral, although headache from an infratentorial lesion may be confined to the suboccipital region at the onset. In the early stages the headache is intermittent, but it later becomes more frequent, more prolonged and more severe. It may be described as throbbing or bursting in character and may become worse on coughing, straining or excitement or when the patient is lying in the prone position.

Epileptiform Seizures.

Epileptiform seizures are so commonly associated with intracranial tumours, often as the initial symptom, that every patient suffering from seizures of any type should be regarded as a tumour suspect and should have a complete and careful neurological investigation. This would appear to be rather a broad statement; but the more I see of these cases, the more I realize its truth. This is more important as the age of onset increases, and particularly if there is any evidence of a focal nature in the pattern of the attack. With regard to patients who have a long history, or who give a history of similar seizures in other members of the family, or, in fact, all patients without any focal signs up to the age of fourteen years, I feel that a more conservative attitude may be adopted and a trial with medication is permissible. These patients should be kept under constant observation, as occasionally a tumour has been found in such cases, and also there is no reason why a primary epileptic should not develop a tumour.

Every effort should be made to obtain an accurate account of a seizure from the patient and from observers, as some information of localizing value may be elicited. It is amazing how few people, even when medically trained, are able to give a concise chronological account of an epileptiform seizure. In most cases the bystanders are so busy rushing about frantically or sitting on top of the patient to hold him down, instead of letting him have his fit in peace, that much valuable information is lost. When obtaining a history one should beware of inaccurate observations. The observer should be questioned again and again, and if there is the slightest doubt on any point that point should be completely disregarded, as it would be tragic to open a skull on the basis of inaccurate information. The motor and sensory phenomena that occur within the first few seconds of the attack are of greatest localizing value, as they indicate the firing point in the cerebral cortex from which the attack originates. Thus it can be seen that the so-called aura is not really a warning of an oncoming attack, but, in reality, the beginning of the attack itself.

An epileptic fit or seizure is really the outward manifestation of a cerebral dysrhythmia that commences at one or more points in the brain and spreads outwards like a radio wave or the ripple on a pond when a pebble is thrown into the water. As this march of abnormal neuronal impulses spreads, and various adjacent areas become involved, there is a corresponding march of sensory or motor phenomena that may be experienced by the patient or seen by an observer. In many cases this march may be so rapid that the component parts are not apparent, and the patient may simply utter a cry and fall down unconscious in a generalized seizure. It should be realized that, in cases of tumour, the seizures do not originate from the actual tumour cells, but from the neighbouring damaged cortical nerve cells. The following is a composite account of one type of focal attack, and it includes the more important points that should be inquired into by the medical examiner.

PATIENT: I always get a warning for about a minute before the fit by a feeling of numbness and tingling that starts in the tips of the fingers of my right hand, then my fingers start to twitch and the elbow and shoulder begin to jerk, and that is all I remember. When I come out of it I feel very tired and my right hand is weak for half an hour or so, then I am quite normal again.

OBSERVER: At the beginning of each attack I notice a queer expression on his face, and about thirty seconds later the fingers of his right hand begin to twitch. Within a further thirty seconds this twitching spreads to his forearm and shoulder. His head turns to the right, the right side of his face twitches, and he falls down unconscious, usually to the right side. I quickly lay him on his back, loosen his tie and collar to give him a free airway, and place half a clothes peg wound round with a piece of cloth between his teeth. By this time the convulsive seizures become generalized, but more marked on the right side, the left side being more rigid. He froths at his mouth and his face becomes blue, particularly around the mouth. He doesn't breathe much during the attack, but his breathing is deep and laboured when the convulsions stop. The convulsions last about one and a half to two minutes and then he gradually becomes conscious. His right hand is definitely weak for half an hour or so afterwards. He has occasionally lost control of his bladder and bowels during the attack. He has bitten his tongue and cheek on previous occasions before we started using the clothes peg.

This is, of course, a purely hypothetical description, which one always hopes to obtain instead of having to ferret out the details one by one. It gives the march of sensory and motor phenomena from a firing point situated about one inch above the left ear in the post-central cortex. It also demonstrates the correct management during a seizure. Such actions as holding the patient down, plunging him into a hot mustard bath, applying hot or cold packs, blankets *et cetera*, are entirely incorrect, as any interference only tends to act as an irritant and prolong the attack. Seizures arising from other cortical areas would have corresponding differences in their pattern.

It must be realized that only a relatively small number of epileptic patients are suffering from tumours. In the majority of cases there is no apparent cause, and these types of epilepsy have received various names, such as idiopathic, essential or cryptogenic epilepsy. In such cases an attack may start from a single firing point and have an extremely rapid spread, or it may originate from several scattered firing points throughout the brain. In either case no focal evidence is apparent to an observer. This, however, does not eliminate the presence of an expanding lesion, which frequently produces a seizure of a type without any evidence of a focal nature. In summarizing the relative importance of seizures with regard to tumours, I should like to stress forcibly the vital necessity for complete neurological investigation (including encephalography) of all epileptic patients who show any focal evidence in the pattern of their attack. In all cases in which the onset is after the age of about fourteen to sixteen years, such an investigation should be made. Patients with a long history or with an onset before the age of fourteen years can first be treated medically with safety, providing their attacks are not focal. They must be kept under constant observation, and the slightest sign of a progressive nature should be regarded as an indication for further investigation. One must be careful not to give way to wishful thinking after the first seizure We are very apt to compromise, especially when the patient or parents are apprehensive of any investigation, and adopt a "wait and see" attitude. This is dangerous, as the interval between the first and second attacks due to a tumour may be as long as one or more years. It is far better that many should be subjected to the expense and discomfort of a complete investigation than that one should die because that investigation was not carried out or was delayed.

The following case illustrates the tragedy of not carrying out ventricular air studies in a case of focal epilepsy starting late in life. If the condition had been recognized in the early stages, a good result might have been obtained.

CASE II.—Mr. P.N., aged forty-five years, complained of epileptiform seizures of four years' duration. Most of these attacks had a focal pattern, in that the movements were confined to the left arm and leg. When I first examined him, slowing of cerebration and mental confusion and a left hemiparesis were present. Ventriculographic examination revealed a large right parietal expanding lesion. At operation the outline of a large, solid tumour could be felt with the brain needle. As the tumour was deep and almost certainly involved the *corpus callosum*, no attempt was made to remove it. A subtemporal decompression operation was carried out purely as a palliative measure. The patient improved for a few days, but his condition became rapidly worse and he died.

Vomiting.

Vomiting rarely occurs in the early stages, but it is frequently encountered in the later stages when the intracranial pressure becomes high, and it is usually associated with severe headache. Intermittent attacks of headache and vomiting, which may be relieved by lying down or suddenly changing the position of the head, are suggestive of a third ventricle cyst which happens to obstruct the flow of cerebro-spinal fluid until it is dislodged. Vomiting may sometimes be projectile in nature, but this is much less common than was formerly supposed.

Ataxia.

Ataxia may be a predominant symptom in various diseases of the central nervous system, but progressive ataxia should always be investigated to exclude an expanding lesion. True ataxia is usually due to some interference with the function of the cerebellum or labyrinths, and such dysfunction may be caused by a tumour. Tumours of the frontal lobe may produce symptoms and signs characteristic of a cerebellar tumour, and such lesions must be localized accurately by ventricular air studies, as the result is likely to be fatal if a suboccipital craniotomy is performed in a case in which a supratentorial expanding lesion is present. Tumours involving the post-central cortex may produce a pseudo-ataxia. In these cases the incoordination of movement is due to loss of deep joint position sense, and is greatly exaggerated when the eyes are closed, whereas true ataxia is not increased to such an extent when the assistance of vision is eliminated.

Vertigo.

Occasionally vertigo may be associated with increased intracranial pressure, and is probably due to interference with the blood circulation in the labyrinths.

Dysphasia.

Various forms of dysphasia may be met with in cases of cerebral tumour, according to which part of the speech-controlling cortex is involved. Lesions of the motor speech or Broca's area produce a dysphasia in which the patient knows what he wants to say but is unable to speak the words or sentence. Such patients can recognize objects and will agree when the correct name is spoken by the examiner. Emotional speech in such cases is much less affected, and the patient may be able to swear quite fluently while being otherwise speechless. This is termed verbal or motor dysphasia. Writing is similarly affected, in that the patient can think quite clearly, but is unable to translate his thoughts into writing. Nominal dysphasia is an inability to name objects correctly, although the patient may be able to demonstrate the use of the object. For example, he may go through the motions of writing when presented with a pencil or a pen although unable to name the object. This may occur in lesions near the angular gyrus or in the temporal or frontal lobes. Jargon dysphasia is sometimes associated with lesions of the posterior part of the temporal lobe, and the term is in itself descriptive, in that the patient may talk quite volubly and pour out a stream of meaningless words or sounds. Word-blindness or visual dysphasia is an inability to comprehend written words or sentences, and may occur in lesions of the left parieto-occipital cortex. Similarly, word deafness or auditory dysphasia is an inability to comprehend spoken words and may result from lesions of the left temporal lobe.

Mental Symptoms.

I should like to emblazon the two words "mental symptoms" across this page in letters of fire, so important is their association with cerebral tumours. In all cases in which mental disturbance is present, whether it be neurosis, hysteria or true insanity, one should keep in mind the possibility of an intracranial expanding lesion. Each case should be gone into thoroughly with a careful history and examination, and unless a definite psychopathic diagnosis can be made, encephalography should be performed to eliminate a tumour. Mental symptoms may be caused by direct involvement of the *corpus callosum* or frontal lobes or by increased intracranial pressure due to tumours in other situations. They usually begin with vague abnormalities of behaviour, impairment of memory and slowing of cerebration, leading to progressive dementia with personal carelessness and incontinence of the sphincters. I believe it is wise, in all cases of progressive dementia occurring in previously normal people, to regard those people as tumour suspects and to carry out ventricular air studies.

The following case contains a dual object lesson. The patient's hysterical symptoms masked an underlying cerebral tumour. I had labelled her condition as functional, and I did not see fit to review this decision until it was almost too late.

CASE III.—Miss V.B., aged forty-five years, was first examined by me in 1942. She complained of deterioration of memory of twelve months' duration and of seizures of five months' duration. She had suffered from poliomyelitis at the age of six years, and had a pronounced residual defect in both legs and the left arm; bilateral ankle ankylosis had been performed. She was admitted to hospital immediately as a tumour suspect. Ventricular air studies revealed only slight abnormality. She had a "seizure" in my presence, which was obviously hysterical, and which she stated was similar to the previous attacks. Neurological examination gave confusing results because of the hysterical element and the poliomyelitis lesions. She was regarded as suffering from pure hysteria and treated accordingly, mainly by painful electrical stimulation of the left arm and leg and verbal encouragement. After this she lost all her symptoms and was discharged from hospital feeling well.

During the following three years she consulted other doctors for different symptoms which varied considerably in type and severity. Three of these doctors called me in consultation, as each felt that all her symptoms were not functional and that there was some underlying organic lesion. Unfortunately I was biased beforehand and still regarded her condition as purely functional, until finally I realized that possibly the others were right and I was wrong. She was readmitted to the Royal Prince Alfred Hospital, and ventricular air studies then revealed a right parasagittal expanding lesion. This proved to be a large meningioma and was successfully removed at operation. She is now perfectly well physically, but still has pronounced weakness of her left arm and leg.

The lesson to be learnt from this case is that the patient was pigeon-holed as suffering from a functional condition, whereas she should have been discharged from hospital as a tumour suspect and readmitted in six months' time for further ventricular air studies. If operation had been carried out earlier, almost certainly the weakness of her left arm and leg would have been avoided.

The next case illustrates the point that an hysterical patient may subsequently develop an intracranial expanding lesion.

CASE IV.—Mr. T., aged forty-five years, complained of loss of use in his legs, and of attacks in which both his legs shook violently. I saw him in consultation with two other honorary medical officers, and we all agreed his condition was entirely functional. A full-volume encephalogram was done as a therapeutic measure, and the X-ray films revealed a well-filled and perfectly normal ventricular system. About six weeks later he was readmitted to hospital with similar symptoms. While in hospital he had a sudden left hemiplegia, which was certainly organic in origin. Ventricular air studies revealed a large right parietal tumour. The lesion was regarded as a rapidly growing and inoperable *glioblastoma multiforme*. This impression was later confirmed at autopsy.

General Symptoms and Signs.

Evidence of glandular dyscrasia such as adiposity, interference with menstruation, growth of superfluous hair, excessive thirst and polyuria should lead one to suspect an intracranial lesion. If a tumour is the cause, it is usually in the form of a pituitary adenoma or a craniopharyngioma; but tumours elsewhere within the cranium may produce these symptoms indirectly through increased intracranial pressure. Pineal tumours are fortunately rare, and they also cause growth and developmental abnormalities. X-ray evidence of an enlarged pituitary fossa would suggest a pituitary tumour while calcification above the sella would suggest a craniopharyngioma. If a bitemporal defect is found on examination of the visual fields, together with an enlarged sella, a pituitary tumour is almost certainly present, although a craniopharyngioma may occasionally cause field defects. The visual fields should always be examined carefully on a proper perimeter, as minor peripheral defects may be missed in crude confrontation tests or on a flat screen. In fact, visual field examination should be made by an ophthalmologist, unless the examiner is accustomed to the procedure, as it is highly technical and fraught with difficulties.

Objective Findings.

Septic Foci.

A thorough search should be made for septic foci, especially in the teeth, tonsils, sinuses, ears and lungs, as various neurological lesions may result from toxic absorption from such foci. Toxic cerebral œdema is the main lesion which simulates an expanding lesion and this condition is in reality a diffuse expanding lesion, comparable to an *astrocytoma diffusum*, which can cause severe headache and vomiting, elevate the cerebro-spinal fluid pressure to that of 500 millimetres of water or more, and produce intense papillœdema of several diopters. It is due to an interference with the water-balance mechanism, with a resultant pronounced increase in the intracellular and interstitial fluid. In these cases there are usually no localizing signs, and a tumour can only be excluded by ventricular air studies. Cerebral or spinal abscess may result from direct or metastatic spread from a primary infective focus.

Extracranial Newgrowths.

Extracranial newgrowths will, of course, be searched for in the general examination. If an intracranial tumour is present, it is a good plan to have an X-ray examination of the chest made as cerebral metastatic carcinoma is frequently the result of spread from a primary growth in the lungs. As such cerebral deposits are often multiple, it is questionable whether it is justifiable to remove the obvious cerebral lesion. Tumours of the skin may give one a lead in the presence of neurological symptoms. Neurofibromatosis is not infrequently associated with similar tumours connected with the spinal nerves or the auditory nerves, and lipomata are occasionally met with in a similar manner.

Blood Pressure.

Headache and dizziness are common symptoms in essential and arteriosclerotic hypertension, and the optic disks may have an appearance similar to that in true papillœdema. Progressive dementia may be due to cerebral arteriosclerosis; but the presence of an expanding lesion can be excluded only by encephalography. The blood pressure may rise in cases of cerebral tumour, but only in the terminal phases.

Head.

External examination of the head may elicit valuable information. A hard bony lump, slowly increasing in size, would suggest the presence of an underlying meningioma, and such a lump may be tender on pressure. An intracranial bruit may be heard with the stethoscope over a vascular tumour or angioma, and occasionally in the presence of an aneurysm. Congestion of the scalp veins and arteries should lead one to suspect the presence of increased intracranial pressure. Arterial congestion is usually confined to the same side as the lesion. In children, before the suture lines close, increased intracranial pressure may reveal itself by an increased size of the head, separation of the suture lines, a "cracked pot" sound on percussion or congestion of the scalp veins.

The Cranial Nerves.

First Cranial Nerve.—Interference with the sense of smell may occur in tumours involving the olfactory tracts, especially in meningiomata of the olfactory groove. A tumour near the uncinate gyrus may reduce the sense of smell in the ipsilateral nostril, or it may produce olfactory hallucinations. Uncinate fits are so called because they are heralded by an unpleasant aroma.

Second Cranial Nerve.—The visual acuity is tested by means of a chart. All cases of progressive deterioration of vision should be fully investigated for cerebral tumour, as this may be the first and only symptom when the patient reports to his doctor. Loss of vision in the presence of a cerebral tumour is usually due to papillœdema, although it may occur from primary atrophy due to direct pressure on the optic nerve by the lesion. If papillœdema is allowed to exist too long without relief, a secondary optic atrophy develops with further loss of vision advancing to complete blindness, which will not recover even after the causative lesion is successfully removed. Papillœdema is believed to be due to obstruction of the ophthalmic veins by the increased intracranial pressure which is transmitted along the nerve sheath. In the early stages the margins of the optic discs are merely blurred and the retinal veins slightly engorged. As the condition progresses, the swelling of the nerve head increases and the physiological cup is obliterated. The veins become more engorged and retinal hæmorrhages may occur, and later the visual acuity deteriorates. Examination of the visual fields may be of great assistance in localizing a tumour, and various defects are found depending on the level in the optic nerves or tracts at which function is interrupted. The following two cases are examples of progressive blindness in which improvement did not occur after successful operative removal of the lesion, which was performed too late.

CASE V.—Miss L.S., aged eighteen years, complained of progressive loss of vision, and later she became ataxic. When I first examined her she could barely distinguish light from dark, and advanced secondary optic atrophy was present on both sides. A large cystic astrocytoma was removed from her cerebellum, and although she recovered completely in all other aspects, she did not regain any of her lost vision.

CASE VI.—Miss V.N., aged sixteen years, was completely blind when she was first referred to me, and she was also ataxic in her movements. She also had a large cystic astrocytoma of her cerebellum, which was removed at operation. All her symptoms disappeared except her loss of vision, and she is still totally blind.

Third, Fourth and Sixth Cranial Nerves.—The third, fourth and sixth cranial nerves are tested together, as they all control eye movement, while the third nerve also controls the size of the pupil and upper lid movement. Paralysis of the fourth or sixth nerve is of little localizing value, because the long course of these nerves subjects them to the influence of increased pressure irrespective of the site of the causative lesion. On the other hand, interference with function of the third nerve is of vital importance. This nerve has three functions—it constricts the pupil, rotates the eyeball medially and elevates the upper lid, so that complete paralysis of the nerve would result in a dilated pupil that did not react to light, in external strabismus and in ptosis of the upper lid. The third nerve is exposed to pressure during its course from the midbrain to the cavernous sinus. This pressure may be exterted directly by a tumour or more frequently by the herniated anterior end of the hippocampal gyrus. Occasionally partial or complete third nerve palsy occurs in migraine. When all three nerves are involved, the lesion is usually in the region of the cavernous sinus as an aneurysm or other tumour. If one or more of these nerves is affected, one should always think of a cerebral tumour.

Fifth Cranial Nerve.—The trigeminal nerve is rarely affected in cerebral tumour, but when it is, the lesion is usually situated in the cerebello-pontine angle or near the cavernous sinus.

Seventh Cranial Nerve.—Lower facial movements are affected in lesions of the pyramidal tract, and facial paralysis may be part of a complete hemiplegia. The forehead is innervated from both cerebral hemispheres, consequently it is not greatly affected in lesions of one pyramidal tract. If the whole of one side of the face is paralysed, including the forehead, the lesion must be at or below the level of the facial nucleus. This could be the result of a pontine tumour, but it is usually a condition of facial or Bell's palsy.

Eighth Cranial Nerve.—Eighth nerve tumours are not uncommon, and are suggested by progressive nerve deafness, tinnitus and loss of balance. Labyrinth tests reveal a delayed or absent response. As the tumour grows, it compresses the pons, and the trigeminal and facial nerves may be affected.

Ninth, Tenth, Eleventh and Twelfth Cranial Nerves.—The ninth, tenth, eleventh and twelfth cranial nerves are rarely affected by intracranial expanding lesions, except those that involve the pons and medulla, in which case any surgical removal is usually not possible.

Motor System.

All movements should be examined for weakness or paralysis. Hemiplegia usually indicates a lesion in the opposite cerebral hemisphere, but it may occur on the same side as the lesion. In the latter case a large tumour pushes the mid-brain towards the opposite side and forces the opposite *crus cerebri* against the sharp non-yielding free edge of the *tentorium cerebelli.* In this manner the opposite pyramidal tract fibres are damaged above their point of decussation, an ipsilateral hemiplegia being produced. Although loss of muscle power may result from a variety of neurological lesions, an intracranial or intraspinal expanding lesion must always be kept in mind, especially when the signs are unilateral or segmental in distribution. An intraspinal tumour usually produces bilateral sensory or motor signs below its segmental level, and in the later stages bladder and bowel control may be affected. Sometimes, however, a small intraspinal tumour may be more selective and may affect only one or two spinal tracts. Muscle wasting and fibrillation suggest a lower motor neurone lesion which is usually degenerative in nature but may be due to a tumour. It is important to note the state of muscle tone in the extremities. This is usually of little value if the tone is equal on the two sides; but it is important if there is any difference. In pyramidal tract lesions, provided the reflex arc is preserved, the tone of the muscles below the lesion level is usually increased. In lesions in which the reflex arc is involved, muscle tone is diminished. Diminution of tone is also found in lesions of the cerebellum and occasionally in lesions in which the motor cortex is involved.

Reflexes.

Alterations in deep reflexes are of great assistance in revealing the presence of a pyramidal tract lesion. In the majority of cases in which the reflex arc is preserved, the reflexes are exaggerated owing to loss of cortical control; but when the reflex arc is interrupted by the lesion the deep reflexes are diminished or absent. Any difference in a reflex response on the two sides is of far grater importance than when the reflexes are hyperactive or hypoactive, but equal. Usually differences in reflexes are fairly obvious, but sometimes the examiner must test a reflex many times to detect a minor irregularity. Reflexes may be roughly divided into two groups—deep and superficial. The main deep or tendon reflexes are the biceps, triceps, supinator, patellar, quadriceps (knee), and *tendo Achillis* (ankle). I have adopted numerical symbols to represent variation in reflex response, and *plus* or *minus* signs may also be used to indicate finer differences (see Table I).

TABLE I.

State of Reflex.	Right.	Left.
Absent	0	0
Diminished	1	1
Normal	2	2
Increased	3	3
Increased with temporary clonus	4	4
Increased with sustained clonus	5	5

Superficial or cutaneous reflexes are also valuable in revealing a pyramidal tract lesion when the reflex is diminished or absent. The more commonly known of these are the abdominal, cremasteric, plantar and grasp reflexes. The abdominal reflexes are really represented by three separate segments, but for practical purposes they can be subdivided into upper and lower reflexes, or more roughly stated as one unit on each side. The last-mentioned method is quite accurate for intracranial lesions. It must be remembered that abdominal reflexes are subject to a considerable amount of normal variation, as in patients with fat or flabby abdominal walls, so that little importance can be attached to abdominal reflexes that are equal whether they are hypoactive or hyperactive. The cremasteric reflex is elicited by stroking the inner side of the thigh, causing a contraction of the cremaster muscle which elevates the testicle on that side. The same comments apply to this as to the abdominal reflex.

The plantar or Babinski's reflex is the most important of the superficial reflexes with regard to pyramidal tract lesions. It should be tested by stroking the outer side of the sole, which produces a dorsiflexion of the great toe and fanning of the other toes in a pyramidal tract lesion, and plantar flexion of the toes in the normal subject. Do not stroke any part of the sole at random, because sometimes a dorsiflexor response may be obtained by stroking the inner side of the sole while a normal plantar flexor response follows stroking of the outer side of the sole. The plantar reflex may be checked by Oppenheim's reflex, in which firm moving pressure on the skin over the tibia causes dorsiflexion of the great toe. The grasp reflex is obtained by touching the palm of the patient's hand, especially between the thumb and forefinger, when the hand will grasp the object and the patient may be unable to let go voluntarily. This usually occurs in lesions involving the upper medial aspect of the opposite frontal lobe. It may, however, result from disturbance of frontal lobe function by tumours in other parts of the brain. Numerous other reflexes have been described, but those noted above are the most important.

Sensation.

Alteration in various sensations may afford an important clue to a localized lesion of the central nervous system. Pain, touch and temperature are the most important sensations and are tested by a moderately sharp pin, cotton wool and two test-tubes containing hot and cold water respectively. There are other forms of sensation which can be tested, such as tactile discrimination, vibration, postural sensibility and passive movement. These are refinements that may help towards localization; but in a routine examination testing of the sensations of pain, touch and temperature is usually sufficient to reveal any abnormality. Care should be taken in testing sensory loss in an hysterical patient. In such cases there is usually a circular upper level without any definite segmental distribution. If there is any doubt, the patient should be regarded as a tumour suspect and further tests should be carried out. In expanding lesions within the spinal canal, the sensory loss has a segmental distribution if the nerve roots alone are involved, and a segmental upper level with impairment below if the sensory tracts in the spinal cord are affected. Sensory loss from intracranial expanding lesions is not common unless a large area of the post-central cortex or sensory pathways is involved. Occasionally one finds hyperæsthesia or actual pain in an extremity due to a tumour involving the basal ganglia.

Coordination.

Tests are carried out to detect any evidence of incoordination on movement in one or other of the patient's extremities. In the upper extremity this may be done by the finger-nose-finger test, in which the patient alternately touches the tip of his own nose and the examiner's finger. The finger-to-finger test is carried out by the patient swinging his arms through a wide arc to bring the tips of his two index fingers together. Ability to perform rapidly alternating movements synchronously is tested by having the patient pronate and supinate his hands and forearms as quickly as possible or by having him pat the bed with both hands. Coordination of the lower extremities is tested by the heel-knee-tibia test in which the patient places one heel on the opposite knee and runs it downwards along the blade to the ankle. All these tests should be done first with the eyes open so that the patient can seen what he is doing, and then with the eyes closed. Evidence of incoordination usually indicates a lesion of the cerebellum or of certain of the cerebellar tracts. In such cases a true incoordination is present which shows little or no aggravation when the eyes are closed. In certain postcentral cortical lesions, in which loss of postural sensibility and of power of appreciation of passive movement is present, one may find a type of incoordination which is hardly noticeable when the patient's eyes are open, but which is pronounced when the eyes are closed. This is not true incoordination, as the muscles can coordinate well when the patient is able to see what he is doing, but the tests are not accurately performed when he is deprived of the aid of vision. Incoordination of an extremity usually indicates a cerebellar lesion on the same side, but occasionally it is found in the presence of a frontal lobe tumour of the opposite side.

Walking and Station.

Valuable information may be obtained by observing abormalities in the patient's gait and in his standing with his eyes open and closed. An ataxic gait may indicate a lesion in the cerebellum, in the labyrinth or occasionally in one or other frontal lobe. Such ataxia may be due to a degenerative lesion or to an expanding lesion. A spastic gait, especially if unilateral, is indicative of a pyramdal tract lesion which may be in the form of a tumour. Unsteadiness when standing with the heels and toes together is also suggestive of such a lesion. In this test one must be careful of the patient who is hysterical or who is malingering. In true ataxia a person may fall when his eyes are closed unless the examiner catches him, and he will make no effort to recover himself until it is too late. A patient who is hysterical or who is malingering will give a rather exaggerated exhibition of falling when his eyes are closed, but he will always see fit to recover himself when he reaches a certain angle, and if he does fall it is purely by accident.

Autonomic System.

The examiner should look for undue dryness, sweating, redness or pallor of the skin. One rarely finds evidence of

O.C.P.

OESTROGENINE COMPOUND with PHENOBARBITAL

THYROID, OESTROGEN
CALCIUM & PHENOBARBITAL
Correctly Balanced and
Perfectly Tolerated.

FOR THE REPLACEMENT and
SEDATIVE TREATMENT OF
MENOPAUSAL AND
POST-MENOPAUSAL SYMPTOMS.

Dosage: Two, three or four tablets per day.

Prices to Patients: Bottles of 25 Tablets, **3/3** Retail.
Bottles of 100 Tablets, **10/9** Retail.

Fawns & McAllan

MELBOURNE, SYDNEY, HOBART and PERTH

FELLOWS' Compound Syrup

FORMULA: Each fluid drachm contains

Strychnine Hydrochloride	Gr. 1/64
Manganese Hypophosphite	Gr. 1/8
Potassium Hypophosphite	Gr. 1/8
Sodium Hypophosphite	Gr. 1/8
Calcium Hypophosphite	Gr. 1/3
Iron Pyrophosphate	Gr. 1/8
Quinine Sulphate	Gr. 1/20

Prescribed by the members of the Medical Profession and sold in many countries for more than sixty years.

1. Produces bitter and therefore tonic effects upon the alimentary canal.
2. Improves muscular tone and nutrition.
3. Provides limited respiratory and vasomotor stimulation.

Samples on Request

FELLOWS MEDICAL MANUFACTURING COMPANY, INC.

26 Christopher Street, New York City

WAMPOLE'S

PHOSPHO-LECITHIN

(GLYCEROPHOSPHATES WITH LECITHIN AND AVENIN)

A NERVE FOOD AND TONIC

VALUABLE IN NERVOUS EXHAUSTION FROM OVERWORK, WORRY, GRIEF, ANXIETY OR EXCESSES OF ANY KIND

DIRECTIONS

In Bottles 15 oz.

For adults one dessertspoonful four times daily, preferably before meals and before retiring; children, according to age, from one-half teaspoonful to one dessertspoonful at same intervals as for adults.

In Bottles 15 oz.

Made in Canada

HENRY K. WAMPOLE & CO., Limited
Perth, Ontario, Canada

have been for more than forty years one of the leading Pharmaceutical Specialty Houses of Canada.

Stocks held in each State by all Australian wholesale drug houses.

HAMILTON'S CALCIUM
THE HAMILTON LABORATORIES LTD., ADELAIDE
AUSTRALIA

THE ORIGINAL EFFERVESCENT CALCIUM

HAMILTON'S CALCIUM

FOR PROLONGED THERAPY
FOR GREATER SOLUBILITY

EACH DRACHM CONTAINS 20 GRAINS OF CALCIUM GLUCONATE WITH VITAMINS A AND D
AVAILABLE IN 2½ OZ. AND 15 OZ. PACKAGES

THE HAMILTON LABORATORIES LTD.
ADELAIDE — AUSTRALIA

For pleasant Calcium administration

IDEAL FOR DOCTOR AND PATIENT . . .

Situated in one of Victoria's most glorious beauty spots—Warburton. Surrounded on all sides by beautiful hills, lying in the shadow of Mount Donna Buang. Central Heating System. Hot and cold water in every bedroom.

Natural, wholesome and appetising diet. Massage and Hydrotherapy a speciality. Equipment includes Ultra-Violet Ray, Diathermy, Galvanic, Surging Galvanic, and Sinusoidal Generators, Electric Light Bath, Water Massage, etc.

VICTORIA'S HYDRO
WARBURTON, VICTORIA.

POST GRADUATE STUDY

☞ **Are you preparing for any Medical or Surgical Examination?**

Send Coupon below for valuable publication

"GUIDE TO MEDICAL EXAMINATIONS"

PRINCIPAL CONTENTS

The Examinations of the Conjoint Board and other Examining Bodies.
The M.D. Degrees of all British and Colonial Universities.
How to pass the F.R.C.S. Examination.
The M.R.C.P. London and Edinburgh.
Diploma in Anæsthetics.
The Diploma in Tropical Medicine.
Diploma in Ophthalmology.
Diploma in Psychological Medicine.
Diploma in Child Health.
Diploma in Radiology.

You can prepare for any of these qualifications by postal study at home and come up to Great Britain for examination. We specialize in Post-graduate tuition.

THE SECRETARY,
MEDICAL CORRESPONDENCE COLLEGE,
19 Welbeck Street, London, W.1.

Sir: Please send me a copy of your "Guide to Medical Examinations" by return.

Name ....
Address ....
Examinations in which interested ....
M.J. of A.

autonomic disturbance in tumours of the nervous system, except in the later stages when the extremities may be cold and clammy with excessive sweating.

Special Methods of Investigation.

Spinal, Cisternal and Ventricular Puncture.

A lumbar puncture should be performed in every case of suspected tumour. A fine 22-gauge needle should be used, as a larger needle may leave a small hole in the dura and arachnoid through which the cerebro-spinal fluid may escape, with subsequent reduction in pressure which may be dangerous. If the pressure is within normal limits, sufficient fluid should be withdrawn for the necessary laboratory tests. The normal findings in the cerebrospinal fluid are as follows:

Pressure: 80 to 180 millimetres of water (horizontal).
Colour: Fluid is clear and colourless.
Cell content: 0 to 5 lymphocytes per millilitre.
Globulin content: 0.
Protein content: 5 to 45 milligrammes *per centum.*
Sugar content: 50 to 80 milligrammes *per centum.*
Chloride content: 720 to 750 milligrammes *per centum.*
Colloidal gold curve: 0000000000.

The fluid pressure when the patient is in the vertical position depends on the height of the patient, and in the normal subject the fluid reaches the level of the basal cistern. The protein content in the lumbar fluid is 15 to 45 milligrammes *per centum*, in the cisternal fluid it is 10 to 25 milligrammes *per centum*, and in the ventricular fluid it is 5·0 to 15 milligrammes *per centum.*

If the cerebro-spinal fluid pressure is high, only one or two cubic centimetres (including the fluid in the manometer) should be withdrawn very slowly. Rapid withdrawal of large quantities of fluid by the lumbar route, in cases of spinal or intracranial tumour, is extremely dangerous, and may well result in aggravation of the patient's symptoms and perhaps in rapid death. Cisternal or ventricular puncture to obtain fluid for testing is practically never indicated.

X-ray Examination.

Flat Plates.—Flat X-ray films of the skull or spine should always be taken in cases of a suspected tumour. In the spinal canal one may find widening of the canal or bone erosion, and in rare cases calcification in a spinal tumour will show up in the X-ray films. In viewing an X-ray film of the skull, one should look for evidence of erosion or hyperostosis of the bone and any abnormal formation of vascular channels. Calcification is frequently found in the pineal gland, which should lie in the mid-line, and a fine woolly type of calcification is also frequently seen in the chorioid plexus. This calcification is of no pathological significance, except when the shadow is displaced from its normal position. The pituitary fossa may be "ballooned" by a pituitary tumour, or the clinoid processes may be absorbed and enlargement of the pituitary fossa may be present owing to increased intracranial pressure.

Air Studies and X-ray Examination.—Ventricular air studies afford by far the most valuable information with regard to the presence and location of an intracranial expanding lesion. Cerebro-spinal fluid is replaced by air or oxygen, which is directed to the ventricular system, where it shows up as a dark shadow in the X-ray plates in contrast to the intracranial contents. If the cerebrospinal fluid pressure is normal, then air may be injected through a lumbar puncture needle; but if an expanding lesion is suspected, only 20 to 25 cubic centimetres should be injected and the procedure should be stopped immediately on the slightest alteration in the patient's condition. If the intracranial pressure is high, the injection of air by the lumbar route is extremely dangerous and should never be attempted. In such cases the air should be injected directly into the lateral ventricles through a brain needle inserted through a burr hole in the skull. By the latter procedure, one is able to maintain a normal pressure much more accurately, and the burr hole acts as a safety valve to remove the air or reduce the pressure should the patient's condition deteriorate suddenly. If an expanding lesion is found, the surgeon should proceed immediately to remove it, as any delay caused by leaving the patient overnight after injecting air is very dangerous. If it is impossible to go ahead immediately with the major operation, or if operative removal is contraindicated, the air should always be removed through a brain needle after the X-ray pictures have been taken. This removal of air minimizes the risk, but does not completely eliminate it. In the films the configuration of the ventricular system is constant, with the exception of a good deal of individual variation in the occipital horns. Consequently one is able to recognize any variation in size, shape or position of the ventricular system as indicative of a lesion within the cranial cavity. If the pictures are satisfactory, it is possible to locate the exact position of an expanding or contracting lesion, or of obstruction at any point along the cerebro-spinal fluid pathways. Air has also been used as a contrast medium to localize lesions in the spinal canal. Unfortunately there are so many shadows of similar density in this region that it is usually difficult to make out the exact outline of the air. A positive result is valuable, but a negative result, which is much more frequent, is not sufficient to eliminate an expanding lesion.

Opaque Media and X-ray Examination.—Various opaque media have been used for the diagnosis and localization of intracranial and intraspinal expanding lesions. "Thorotrast" has been used to show up the ventricular system; but this procedure is extremely dangerous and I do not believe that it is ever justifiable. It has been shown that "Thorotrast" injected into the ventricles causes pronounced ependymitis and an inflammatory reaction in the subarachnoid space which may extend along the sheaths of the optic nerves. The most valuable use of this substance is in arteriography, especially for revealing the presence of an intracranial aneurysm. Arteriography has also been used to reveal the presence of a cerebral neoplasm by showing up the vascular pattern. This method was used by Monez of Madrid, but although I have seen several of his films in which the neoplasm was beautifully demonstrated, I do not think this procedure is comparable to ventricular air studies for efficiency or safety. Lipiodol has been of great value in localizing intraspinal expanding lesions. The main disadvantage of this substance is that it is never absorbed, and unless it is removed by operation, it becomes encysted within the spinal canal and remains there throughout the patient's life. Recently there have been reports in the literature of radio-opaque substances which are completely absorbed in one or two weeks. I have not yet used any of these, but if such a substance is perfected, it will completely replace the use of lipiodol within the spinal canal.

Electroencephalography.

In recent years the electroencephalogram has been used in some clinics to localize an intracranial expanding lesion. Unfortunately there are many technical difficulties in this procedure, and I have not yet had the courage to operate on electroencephalographic evidence alone without confirmation by ventricular air studies.

Biopsy.

In certain cases in which a lesion has been localized accurately, but in which the surgeon is uncertain of its pathological nature, a small piece of tissue may be sucked out through a biopsy needle and examined microscopically. In this manner the surgeon knows the type of lesion with which he is dealing, and is able to decide whether it is justifiable or not to attempt its removal. In other cases information may be obtained by inserting a brain needle into the suspected area. The experienced neurosurgeon is able to detect the difference in consistency when the needle passes through tumour tissue, and also in this manner he may encounter a cyst which would help him in his diagnosis.

Graduated Lumbar Manometric Test.

The graduated lumbar manometric test is used to detect the presence of a block in the cerebro-spinal fluid pathway, and can be performed with some degree of accuracy. Queckenstedt noted that pressure over the jugular veins caused a rapid rise of the spinal fluid column in a manometer attached to a lumbar puncture needle. When this pressure was released, it was noted that the fluid fell rapidly to its original level. In the presence of a block the rise and fall of the fluid in the manometer are slowed to a degree depending on the completeness of the block. This, however, is a rather crude method, and merely indicates that a block exists somewhere between the cranium and the level of the lumbar puncture needle.

Some years ago William V. Cone and William Grant devised a method by which more accurate diagnosis could be made in cases of partial block and a rather rough localization could be assumed. In this procedure a gauge 18 lumbar puncture needle is inserted low down in the lumbar region and connected with a glass manometer. A sphygmomanometer cuff is wound round the patient's neck and held in place by a non-expansile bandage. The cuff is connected to the sphygmomanometer and inflated alternatively to pressures of 10, 20, 30 and 40 millimetres of mercury. The cuff pressure is maintained for ten seconds and then released. The manometer pressure reading is recorded five seconds and ten seconds after the neck cuff is inflated, and then every ten seconds after release of the cuff pressure until the spinal fluid returns to a steady level. In the normal subject the fluid pressure should reach its maximum within ten seconds and return to normal with five to ten seconds after release. Delay in the rise of the spinal fluid column, and more particularly in the fall after release, is indicative of partial block. If the block is complete, there is no movement at all of the spinal fluid column in the manometer. If there is evidence of a block by this method, the patient is then asked to give three consecutive coughs. If this causes a rapid rise and fall, it suggests that the block lies somewhere between the cranium and the thoracic level. If coughing produces a poor response, the patient is asked to strain as he would when at stool, and if this causes a rapid rise and fall in the spinal manometer it suggests that the block lies between the lumbar and thoracic regions. If there is a poor response on straining, it suggests that the lesion lies low down in the lumbar region. This procedure carries a certain degree of risk in the case of a complete spinal block, as it is likely to force the expanding lesion further downwards, and may increase the patient's symptoms even to the extent of a complete cord lesion at the level of the block. This procedure should never be carried out in the case of an intracranial expanding lesion, as it would be highly dangerous and would afford no important information. It is the practice of many to perform the ordinary manual Queckenstedt test when carrying out a lumbar puncture to ascertain the presence or absence of a block. I have little objection to this procedure in suspected spinal lesions, but I regard it as being extremely dangerous in intracranial lesions, and in the latter case the presence or absence of an obstruction to the cerebro-spinal pathway within the cranium could be more accurately ascertained by the less dangerous method of ventriculography.

Summary and Conclusions.

In this paper an attempt has been made to present, in an abbreviated form, the more important points to be considered in the early diagnosis of intracranial and intraspinal expanding lesions. It has been shown how essential it is to recognize these lesions at an early stage, for if they are permitted to extend beyond a certain point they must do so at the expense of the brain or spinal cord, and damage may be done which may be irreparable even after surgical removal of the tumour has been carried out. There are still many cases in which we are unable to carry out successful removal even when the condition is recognized early. It is doubtful if it will ever be possible to carry out a successful removal of malignant neoplasms involving the basal gangia, mid-brain, pons or medulla. Also it is very questionable if it is justifiable to remove cerebral metastatic tumours or rapidly growing gliomata. Excellent results, however, are obtained with the less malignant gliomata and with non-malignant tumours, provided that they have not progressed to the stage at which essential cerebral or spinal function is interfered with. Even at this stage one sometimes sees remarkable recoveries; but in such cases early recognition would mean a much smoother course for the patient and many fewer grey hairs for the neurosurgeon.

In conclusion, I should like to repeat one point. Every patient with symptoms referable to the central nervous system which become progressively worse should be regarded as a tumour suspect until proved otherwise, and should be subjected to a complete neurological investigation, including examination of the cerebro-spinal fluid and ventricular air studies.

STUDIES IN NICOTINIC ACID.

By Ross Wilson Hawker, M.B., B.S.,
Resident Medical Officer, Royal Hobart Hospital. Hobart.

Before proceeding with an account of my work, I shall briefly reenlighten the reader's mind about the history and physiology of nicotinic acid. This digression is taken almost verbatim from the Nicholas vitamins manual (1943).

The realization in 1915 by Goldberger *et alii* that diet played a major role in the ætiology of pellagra led to the postulation by Goldberger and Tanner (1924) of a definite pellagra-preventive factor. In 1926 it was found that the thermostable portion of the vitamin *B* complex possessed pellagra-preventive properties. Then it was demonstrated by the experiments of Goldberger, Sebrell and others that black-tongue of dogs was analogous to human pellagra. Finally, Elvehjem and his collaborators (1937) isolated the nicotinic acid amide from liver concentrates and demonstrated that it cured dogs of black-tongue. The experiments by Spies (1938) and Harris (1937) on human pellagra showed that the pellagra-preventive factor had finally been discovered.

Although it has been suggested that nicotinic acid is not the only factor concerned in pellagra, present opinion is that although pellagra generally occurs in subjects with multiple deficiencies, deficiency of nicotinic acid or its active compounds is the only factor responsible for the characteristic symptoms of pellagra.

For about seventy-five years chemists have been familiar with nicotinic acid. Funk (1911), in his search for the antineuritic factor, isolated the acid, but failed to realize its nutritional significance. Chemically it is a pyridine β-carboxylic acid.

Although nicotinic acid is usually made commercially by the oxidation of nicotine, this reaction does not appear to be possible in the animal organism. Nicotinic acid is described in the Fourth Addendum to "The British Pharmacopœia" as a white crystalline powder which is odourless and has a feebly acid taste. Its melting point is 234° to 237° C. The acid and its solutions are stable under ordinary conditions and are unaffected even by strong oxidizing agents.

The chief dietary sources are meat and fish. Many cereals such as maize are very low in this factor, but wheat germ and unpolished rice form excellent sources. Yeast is also rich in nicotinic acid.

Nicotinic acid amide forms the prosthetic group of both coenzymes I and II. Coenzyme I consists of one molecule of nicotinamide linked to two molecules of phosphoric acid, one of adenine and two of pentose; whereas coenzyme II contains three molecules of phosphoric acid, but is otherwise chemically identical with coenzyme I. It is at present not clear whether the action of nicotinic acid is entirely due to its part in the production of the above-mentioned coenzymes, or whether its vitamin character is a function of some other properties.

Vasodilatation of the skin is produced by nicotinic acid and its salts, but not by the amide or diethylamide (nikethamide). It is interesting that the latter, better known as "Coramine", which possesses pellagra-preventive properties, has been used for many years as a cardiorespiratory stimulant.

Nicotinic acid and its amide are absorbed unchanged. Nicotinic acid is amidated in the organism after absorption in the blood stream. There are no special storage organs for nicotinic acid or its derivatives.

I. The Influence of Nicotinic Acid in Stimulating the Growth and Development of Primordial Follicles in Immature Virgin Guinea-Pigs.

Six virgin immature guinea-pigs were selected, and two were placed in each of three cages at the animal house attached to the Department of Physiology, Old Medical School, University of Sydney.

Method.

The experiment was carried out as follows.

On December 7, 1943, in the first cage, guinea-pig A was given an intramuscular injection of 25·0 milligrammes of nicotinic acid, and guinea-pig B was used as a control. In the second cage, guinea-pig A was given an intramuscular injection of 25·0 milligrammes of nicotinic acid, and guinea-pig B was used as a control. In the third cage, neither guinea-pig was treated.

On December 8, in the first cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally; guinea-pig B was kept as a control. In the second cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally, and guinea-pig B was used as a control. In the third cage, both guinea-pigs had their ovaries removed.

On December 9, in the first cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally, and guinea-pig B was used as a control. In the second cage guinea-pig A was given 50·0 milligrammes of nicotinic acid orally, and guinea-pig B was used as a control. In the third cage, neither guinea-pig was treated.

On December 10, in the first cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the second cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the third cage, neither guinea-pig was treated.

On December 11, in the first cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the second cage, guinea-pig A was given 50·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the third cage, neither guinea-pig was treated.

On December 13, in the first cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the second cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally and guinea-pig B was used as a control. In the third cage, guinea-pigs A and B were each given 50·0 milligrammes of nicotinic acid orally.

On December 14, in the first cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 75·0 milligrammes of nicotinic acid orally.

On December 15, in the first cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 75·0 milligrammes of nicotinic acid orally.

On December 16, in the first cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 75·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 75·0 milligrammes of nicotinic acid orally.

On December 20, in the first cage, guinea-pig A was given 150·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 150·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 150·0 milligrammes of nicotinic acid orally.

On December 21, in the first cage, guinea-pig A was given 150 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 150·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 150·0 milligrammes of nicotinic acid orally.

On December 22, in the first cage, guinea-pig A was given 150 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 150·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 150·0 milligrammes of nicotinic acid orally.

On December 23, Guinea-pig A was given 150·0 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the second cage, guinea-pig A was given 150 milligrammes of nicotinic acid orally, and guinea-pig B served as a control. In the third cage, guinea-pigs A and B were each given 150·0 milligrammes of nicotinic acid orally.

On December 24, all the animals were anæsthetized into oblivion. The following organs were placed in formalin for twenty-four hours, and then washed in and stored in 70% alcohol: (i) pituitary gland, (ii) ovary, (iii) Fallopian tubes, uterus, vagina, (iv) liver, (v) pancreas, (vi) adrenals.

Owing to difficulty in having sections of the organs made and stained, only the ovaries were examined microscopically. After being dried and weighed these were prepared in March, 1944, by Dr. Rushworth, pathologist to the Marrickville District Hospital.

Results.

Both ovaries of each animal were weighed together (sum) in milligrammes, and the weights were as follows: (i) first control 36·0 milligrammes, second control 37·0 milligrammes, average 36·5 milligrammes; (ii) first treated guinea-pig 45 milligrammes, second treated guinea-pig 44 milligrammes, average 44·5 milligrammes. There was thus an increase of five milligrammes in the weight of the ovaries in the treated animals, which represents an increase of 22% by weight in the treated animals.

The weights of the pituitary glands were as follows: (i) first control 7·6 milligrammes, second control 7·4 milligrammes, average 7·5 milligrammes; (ii) first treated guinea-pig 6·5 milligrammes, second treated guinea-pig 6·0 milligrammes, average 6·25 milligrammes; (iii) first ovariectomized guinea-pig 6·5 milligrammes, second ovariectomized guinea-pig 6·3 milligrammes, average 6·4 milligrammes. Thus there was a decrease in weight of 1·25 milligrammes in the pituitaries of the treated animals. This represents a decrease of 20% by weight in the pituitaries in the treated animals.

Conclusion.

In view of the fact that only four animals were used, the experiment as such is inconclusive; but from the results obtained the percentage increase in the weight of the ovaries and the percentage decrease in the weight of the pituitaries in the treated animals are almost in inverse proportion. This is interesting, in the light of the complex yet harmonious roles played by the gonadotrophic hormones of the anterior lobe of the pituitary and those elaborated by the Graafian follicle and the *corpus luteum* in the normal œstrous cycle.

This increase in weight in the treated ovaries is not due to an increase in the ovarian stroma, but to the rapid proliferation and ripening of many primordial follicles. The ovary was studded with an increased number of ripe ovarian follicles.

II. The Clinical Effects of Nicotinic Acid in Amenorrhœa, Hypomenorrhœa and Dysmenorrhœa.

Amenorrhœa.

Briefly, absence of cyclic menstruation may be physiological or pathological. The former type occurs before puberty, after the menopause, during pregnancy and generally during lactation. Ovulation does not occur before puberty, during pregnancy or following the menopause, but may occur during lactation, as is evidenced by the number of women who become pregnant during that period before menstrual bleeding has been reestablished. Pathological amenorrhœa may be primary or secondary. The former type is due to congenital defects or to abnormalities acquired during early childhood. The latter type is due to abnormalities acquired after the menstrual cycle has been inaugurated.

Amenorrhœa may also be classified as primary and secondary.

Primary Amenorrhœa.

Amenorrhœa is regarded as primary when menstruation has never appeared during the menstrual span of the woman's life—that is, from the usual age of puberty to the age of the menopause. Two types of primary amenorrhœa are usually met with, (i) one in which amenorrhœa is associated with arrested physical development and an absence of secondary sexual characteristics, and (ii) one in which the somatic development is normal.

Primary amenorrhœa with arrested physical development and an absence of secondary sexual characteristics may be due to congenital defects of pituitary, thyreoid, suprarenal cortical or ovarian origin. It may result from endocrine disorder acquired during childhood or adolescence. Congenital amenorrhœa of pituitary origin is seen occasionally in Fröhlich's syndrome, in pituitary infantilism, and in certain types of tumours affecting the chromophobes as well as in lesions involving the hypothalamus. Congenital amenorrhœa of thyreoid origin is seen in cretins and in lesser manifestations of the hypothyreoid state. Amenorrhœa of suprarenal cortical origin is best exemplified by pseudohermaphroditism and virilism, resulting from a congenital tumour of the suprarenal medulla.

Primary amenorrhœa of ovarian origin may occur in congenital tumours (arrhenoblastoma) and in aplasia or other defects of the ovaries which cause them to be functionless—for example, atresia of the ovarian follicles, retention cysts of the ovary or fibroid infiltration and degeneration. The arrest in ovarian development may be either primary ovarian defect or secondary to anterior pituitary or to suprarenal cortical abnormality.

Primary amenorrhœa, with the exception of that due to primary ovarian defect, is associated with other congenital anomalies such as infantilism and rudimentary somatic development, aplasia of the external genitals and uterus, and the absence of other secondary sexual characteristics.

Amenorrhœa due to congenital ovarian defects is generally associated with pronounced somatic changes. Some of these patients may present masculine characteristics; this is particularly true in cases of arrhenoblastoma. In these patients there occur hypertrichosis and masculine bodily configurations and mannerisms. Similar changes are found in the presence of certain tumours of the suprarenal cortex. Other patients may present hypoplasia of the genitals, poorly developed secondary sex characteristics, and some change in stature, such as being too tall and thin, or too short and stout, or too short and thin. The skin is usually smooth, the fingers and extremities are long, and as a rule other hyperthymus characteristics are present. The pituitary sex hormone content in the blood is increased above normal and the œstrin level is diminished. Primary amenorrhœa of acquired origin with normal somatic development may be due to causes occurring at any time in the child's life from birth to just prior to puberty. Therefore somatic development need not be greatly affected. The amenorrhœa may be of non-endocrine origin, resulting from infectious diseases such as typhoid fever, scarlet fever, diphtheria or blood stream infections, or from local or general tuberculosis as well as from syphilis and other degenerative or inflammatory lesions. Amenorrhœa due to these conditions is usually temporary and may be considered as delayed menstruation. Occasionally it may be permanent, resulting from irreparable damage to the pituitary bodies or the ovaries. Permanent amenorrhœa of this type is generally of endocrine origin and of late development, and may be due to inflammatory lesions, cysts or syphilis, or to tumours of the pituitary, the adrenal cortex, the ovaries, the uterus or the Fallopian tubes. At times neither cause nor lesion is discoverable. Somatic changes may be absent, since here it is assumed that the lesions responsible for the amenorrhœa have developed too late to interfere with general bodily growth and development. Gigantism and acromegaly are often associated with this type of amenorrhœa.

Secondary Amenorrhœa.

By secondary amenorrhœa is meant the cessation of menstruation after it has been definitely established. The cause may be endocrine or non-endocrine. Secondary amenorrhœa of endocrine origin may be found in association with pituitary tumours or inflammation, or Simmonds's disease, and occasionally in exophthalmic goitre, in hypothyreoidism, in obesity and in diabetes.

Pathological lesions of the genital tract are responsible for most of the cases of secondary amenorrhœa. Among these lesions may be mentioned ovarian tumours, follicle cysts, retention cysts, and acute and chronic infections and fibrosis of the ovaries, the Fallopian tubes and the uterus.

The non-endocrine causes of amenorrhœa are many and are little understood. Psychic, nervous and emotional disturbances may cause temporary or permanent amenorrhœa. This is seen in the various types of psychoses and in profound emotionalism. Pseudocyesis may occur in those who fervently desire to become pregnant as well as in those who dread pregnancy. Amenorrhœa may also be found as the result of chronic infections, obesity, anæmia, leuchæmia, chlorosis and starvation.

The Relation of Amenorrhœa to Ovulation.

In the great majority of cases ovulation does not occur in the absence of menstruation. Occasionally, however, ovulation does occur in amenorrhœa. This is proved by the number of women who become pregnant, even though they have never menstruated.

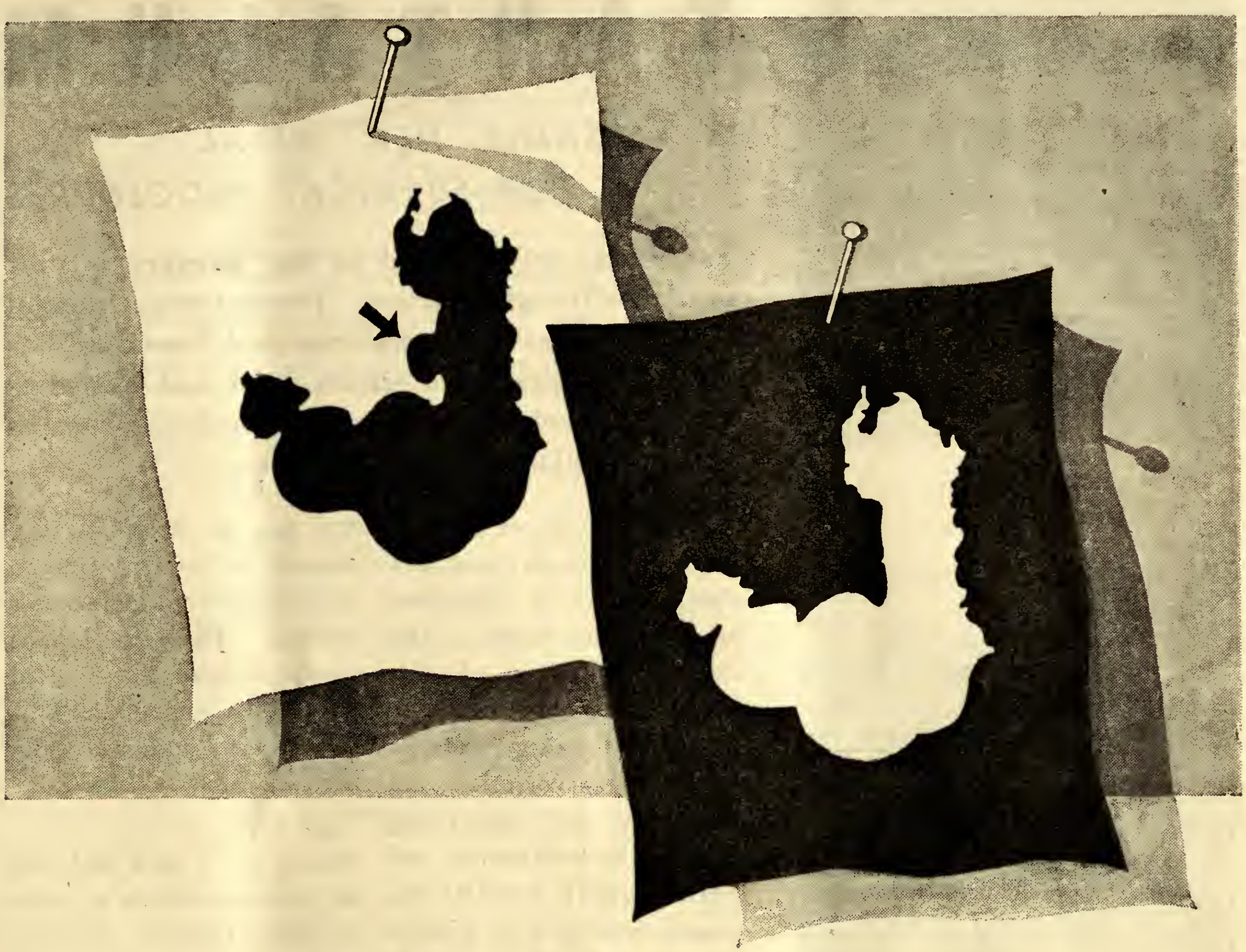
The foregoing discussion on the various types and causes of amenorrhœa, for which I am indebted to S. A. Loewenberg's "Clinical Endocrinology", is essential for a clear understanding of the following clinical cases.

Case I.—A single woman, aged twenty-four years, who had never menstruated, was short and plump, with broad shoulders and narrow hips and unusually smooth skin. There was no evidence of breast formation, or of pubic or axillary hair. In fact, she was completely devoid of secondary sex characteristics which signify functioning ovaries. It was evident she was suffering from primary amenorrhœa of ovarian origin. Her physician aptly described her secondary sexual development as being that of a child, aged ten years.

During January, February and March, 1942, she was subjected to a course of œstrone therapy. By such means two artificial "floodings" were induced, each occurring as an œstrone-withdrawal effect on the day after the last œstrone tablet had been taken. Treatment was then suspended. During the remainder of the year 1942 she gained seventeen pounds in weight. But, apart from the two artificial hæmorrhages (which were not true menstruation), she experienced no menstrual periods.

In May, 1943, for a chronic inflammatory lesion in the corners of her mouth she was ordered "Vibex" tablets with nicotinic acid (Parke, Davis and Company, Limited) containing 1·0 milligramme of thiamin and 25 milligrammes of nicotinic acid. In June she menstruated, the flow being normal in duration, quantity and quality. The mouth lesion cleared up and I induced her to continue with the nicotinic acid tablets. She did not menstruate in July, but still taking tablets, she menstruated again in August. She missed her period in September, but responded again in October and in November. During these seven months there was a rapid development of the secondary sexual characteristics. Treatment was then suspended, and she has menstruated regularly since and has since married. Her dose was one tablet three times a day, and only once did she exhibit signs of intolerance—peripheral vasodilatation, tingling in the extremities and profound irritability, which rapidly passed off within an hour or two. During this treatment she lost weight rapidly (approximately eighteen pounds in four months).

Case II.—A single girl, aged nineteen years, had primary amenorrhœa of ovarian type. The secondary sexual characteristics were grossly underdeveloped. She was given 25 milligrammes of nicotinic acid three times a day for two months. There was no effect. The dose was increased to fifty milligrammes three times a day, and there were still



Rapid Healing **OF PEPTIC ULCER**

Healing of peptic ulcer at a rapid rate is the rule with Amphojel (Colloidal Aluminium Hydroxide Gel-Wyeth) Roentgenological re-examination after ten days of treatment often shows complete disappearance of the ulcer niche.†

† WOLDMAN, E. F., and POLAN, C. G.: The Value of Colloidal Aluminium Hydroxide in the Treatment of Peptic Ulcer: A Review of 407 Consecutive Cases, AM. J. M. Sc. 198: 155-164 (August) 1939.

AMPHOJEL

Colloidal Aluminium Hydroxide Gel

The Medication of Choice in Peptic Ulcer

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

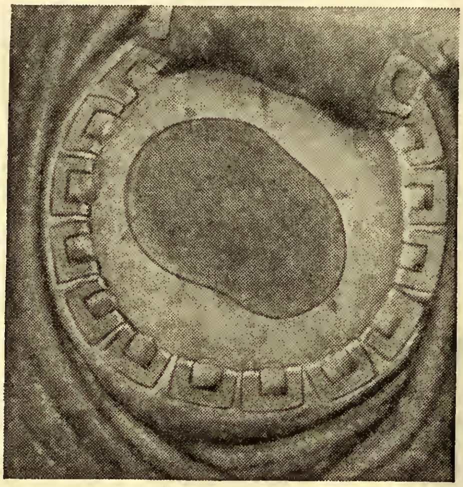
BEFORE REPLACING
SHAKE WELL
AMPHOJEL
12 FLUID OUNCES
WYETH'S
ALUMINA GEL

- *Prompt relief from pain*
- **RAPID HEALING OF ULCER**
- *Fewer recurrences*
- *Less need for restricted diet*
- *No alkalosis; no secondary acid rise*

A1OM

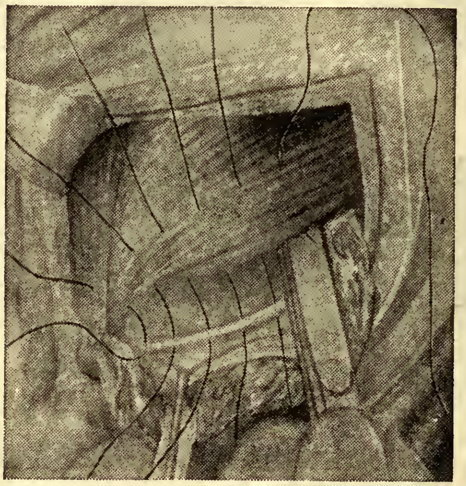
TANTALUM

A VERSATILE NEW METAL FOR SURGICAL PROCEDURES



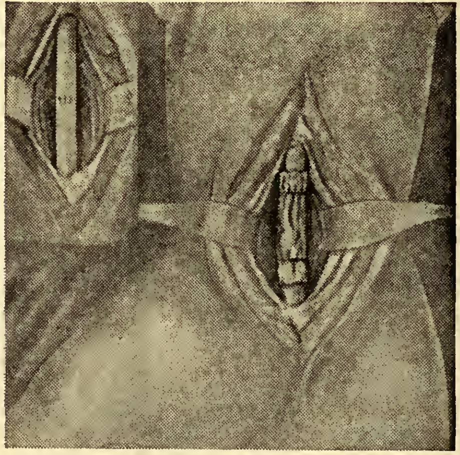
SKULL REPAIR

Tantalum plate set on bone shelf and secured by triangular points. Point holes are made by a flat triangular gouge and points pressed downward.



HERNIOPLASTY

Modified Bassini operation. Tantalum sutures approximating external oblique aponeurosis to Poupart's ligament. Of value in recurrent hernia or in infected areas.



NERVE REPAIR

(Inset). Fine gauge tantalum sutures approximate epineurium of severed median nerve . . . Tantalum foil wrapped loosely about repaired section and secured by loose ties.

Tantalum, widely used in war surgery is now available for general use. Present experimental and clinical evidence indicate that Tantalum has qualities superior to silver, steel and alloys as a metallic substance for non-absorbable sutures and bone plates.

Investigators report it to be inert, non-corrosive and non-electroactive. It produces minimal tissue reaction. The unique properties of this metal make it peculiarly adaptable for surgery. In its resistance to corrosion and acceptance by the living tissue under both normal and pathological conditions. Suture wounds heal without an overgrowth of tissue which usually follows implanting metals. Orthopaedists using Tantalum report little or no overgrowth of callus in bone repair.

It has high tensile strength, exceptional malleability and is impermeable. Wire is available in various gauges and may be wound tightly, knotted or twisted with no objectionable springiness or stiffness. Tantalum sheet is easily formed to desired shapes and contours. Tantalum may be boiled or autoclaved.

Sutures . . . used and tied in the same manner as other non-absorbable sutures, swaged to eyeless Atraloc needles. Wire . . . for suturing and orthopaedic. Supplied on spools. Haemostasis Clips . . . performed clips for use in Cushing as McKenzie clip-holding forceps. Sheet . . . for cranioplasty; reconstructive or plastic repair work.

1TS6

ETHICON
Sutures

Johnson & Johnson

HEAD OFFICE: 200 YORK STREET NORTH, SYDNEY
INTERSTATE BRANCHES:
MELBOURNE BRISBANE ADELAIDE PERTH HOBART

no signs of menstruation; breast changes and the usual accompanying phenomena of development became evident. Within six months from the beginning of treatment she had her first menstrual period. For the next six months the intervals between the periods were seven weeks and six weeks, and now the menstrual periods are regular in time and duration and the flow is of normal quantity. Over the twelve months the patient lost twelve pounds in weight.

Case III.—A married woman, aged thirty-two years, on vaginal examination was found to have a small, fibromuscular uterus. There was no change after six months' therapy.

Hypomenorrhœa.

Hypomenorrhœa is the term generally applied to conditions in which menstruation occurs regularly, but clinically the flow is of insufficient quantity. The menstrual flow may be represented by a few spots occurring daily for one, two or three days, or the quantity of blood lost may be sufficient to stain two or three diapers a day for a few days.

The direct cause of scanty menstruation is insufficient endometrial change, resulting from either insufficient ovarian hormone stimulation or local uterine abnormality due to defective ovaries, hypopituitarism or hypothyreoidism.

The production of an insufficient amount of ovarian hormone may be due to local or congenital disease of the ovaries, or to the more common cause, hypofunction of the anterior pituitary body, in which the quantity of prolan produced is insufficient for proper stimulation of ovaries and uterus.

In hypomenorrhœa of all types the œstrin content of the blood and urine is below normal.

Hypomenorrhœa due to uterine abnormality may be acquired subsequent to the existence of normal menstruation, for example, by frequent curettage, chemical cauterization, or radium implantation, which have a tendency to destroy much of the basal layer of the endometrium so that it becomes incapable of responding to ovarian stimulation.

Case IV.—A married woman, aged twenty-seven years, had had a scanty but regular menstrual flow since puberty, which became established at thirteen years of age. Before 1938 her weight was seven stone four pounds; before she commenced treatment in July, 1944, it was ten stone nine pounds, and her height was five feet one inch. She is thus short and plump, with well-developed secondary sex characteristics.

On July 19, 1944, she commenced treatment, taking one tablet of "Vibex" with nicotinic acid three times a day until she menstruated on August 3. There was no difference in the duration, which is always less than twenty-four hours, nor in the quantity of blood lost, which is scanty. She was thus taking the tablets during the *corpus luteum* phase of the menstrual cycle, and there was no appreciable difference. No tablets were taken between August 3 and 31, when she menstruated again. This time the menstrual period lasted for forty-eight hours and the quantity of blood lost was approximately twice as much as previously. On September 2 she recommenced taking the tablets and continued until September 14, when they were stopped, as menstruation commenced. This period was of a most profuse type; it lasted until October 12, and simulated the condition of *metropathia hæmorrhagica*, there being a proliferative phase but no secretory phase. Large clots were voided, but there was no dysmenorrhœa. During this stage she was ordered "Polyhæmen" tablets, and she lost nine pounds in weight in twelve days. She has not taken any nicotinic acid tablets since September 14, 1944, and her menstrual periods are still within normal range with regard to duration and to quantity and quality of the menstrual flow.

Case V.—A nurse, aged twenty years, was five feet two inches in height and ten stone seven pounds in weight. The menstrual flow was scanty, lasting from eight to twenty-four hours. After she had taken nicotinic acid tablets, fifty milligrammes three times a day for one month, there was no appreciable change in the corresponding monthly period. Treatment was continued for another twenty-eight days. The flow at the end of this month lasted five days, and for the last five menstrual periods it has fluctuated between four and six days. There was a loss of twenty pounds in weight in three months.

Case VI.—Mrs. H.G.K., of Tasmania, was five feet one inch in height and eleven stone eight pounds in weight. The menstrual flow lasted eight to twenty hours. She had no children, but was desirous of pregnancy. Over a period of three months she received weekly injection of theelin in oil. At the end of the third month menstruation occurred and lasted for two and a half days. However, her next three menstrual periods were as usual. She was then given fifty milligrammes of nicotinic acid three times a day, commencing on the first day of her menstrual period. After thirty days the patient experienced a menstrual period lasting for seven days. The following five menstrual periods lasted between five and seven days. The patient is still sterile.

Case VII.—Mrs. M.S., of New South Wales, was ten stone seven pounds in weight and five feet two inches in height. Her menstrual periods usually lasted from twelve to thirty-six hours, and were regular in time. She had been married for four years and had no children, although she wanted them. Within three months after the usual nicotinic acid therapy she had a monthly menstrual period lasting five days. Treatment was then suspended. Over the past year the menstrual periods have lasted from five to six days and are regular in time and in the quantity and quality of the flow. She became pregnant.

Case VIII.—Mrs. Q., of Tasmania, aged forty years, was sterile. Normally the menstrual periods lasted from four to forty-eight hours. After two months' stimulation with nicotinic acid a flow lasting three days was induced, and for the past five months the flow has lasted between three and five days. She is still sterile.

Case IX.—Mrs. R.H., of Tasmania, was five feet two inches in height and eight stone four pounds in weight. She had been married for two years, without children, but was hoping to become pregnant. The menstrual periods usually lasted approximately two days. After treatment with nicotinic acid for sixty days the menstrual periods began to last from three to five days, and she became pregnant.

Three other patients with hypomenorrhœa were also successfully treated. Two of these three received one milligramme of stilbœstrol three times a day for fourteen days from the commencement of the flow, together with nicotinic acid, fifty milligrammes three times a day, from the beginning of one period to the beginning of the following period. There was a rapid response by these two patients compared to the other patient, who received only nicotinic acid for the same period.

In a further two cases there was no change whatsoever after three months' treatment. In the case of married women, pelvic examinations were conducted to exclude pathological lesions in the pelvic organs. This examination was not made in the case of single women.

Dysmenorrhœa.

Dysmenorrhœa may be primary when it is not dependent upon a definite pelvic lesion, and secondary when it is caused by distinct pelvic abnormality. The pain may precede the beginning of the menstrual flow of each cycle by a few hours, or by one or two days, and it may continue with the flow from a few hours to one or two days until free bleeding is established. In rare cases the pain may continue during the entire period.

The cause of primary dysmenorrhœa is not definitely known. There seem to be several factors responsible for this anomaly.

Nervous causes, including psychic disturbances and instability of the autonomic nervous system, may be operative. Either there exists a common cause for both the dysmenorrhœa and the autonomic nervous system disturbances, or the one causes the other. The fact that dysmenorrhœa is more prevalent among neurotic, highly strung and emotional women indicates that psychogenic factors or the adrenal medulla play a part.

Hypoplasia or obstruction of the uterus may be present; the cervical canal and possibly also the Fallopian tubes may cause pain when these structures are incapable of transmitting freely the discharging blood and the frequently accompanying solid particles.

Endocrine disturbances causing spasticity are responsible for much dysmenorrhœa. The pain occurs usually on the first day of the flow and is spasmodic or colicky in nature. The nature of the pain would suggest a disordered and spasmodic contraction of the uterine muscle. While the uterine muscle is under the influence of œstrin, its motility is increased and it is more sensitive to pitocin. The *corpus luteum* hormone has a reverse effect and is an inhibitor of uterine contractions. In the latter half of the menstrual cycle, the luteal phase is superimposed upon the œstrus phase, and the action of the *corpus luteum* becomes more prominent until about four days before the menstrual flow commences, when the gland begins to retrogress. This withdrawal of the supply of progesterone allows unchecked the action of the œstrone, the content of which in the blood has been increasing steadily during the menstrual cycle and has reached its maximum a week before menstruation. Thus the motility of the uterine muscle is greatest on the first day of the flow and for one or two days beforehand.

Disordered contraction of the uterine musculature may, therefore, result from an imbalance of the ovarian hormones, which may be quantitative or chronological in nature. To argue more from theory than from fact, it might be supposed that the over-production of œstrone is an obvious cause of excessive uterine contractions and so of pain; but in the one condition of *metropathia hæmorrhagica* in which this is known to occur, painful menstruation is absent. On the other hand, the over-production of progesterone would result in an excessive development of the premenstrual decidua. The endometrium which is cast off would therefore be more compact and in consequence be shed in the form of portions of relatively tough tissue. Whereas in a large number of women the expulsion of such shreds of tissue is undoubtedly accompanied by severe uterine colic, cases occur in which whole casts of the endometrium are passed without undue pain, and in addition severe colic occurs without the passage of either clots of blood or shreds of endometrium.

Fifteen patients were treated; only three cases will be described in detail.

Case X.—A woman, aged thirty-one years, had been married for ten years and suffered from painful menstruation. The pain was of a colicky nature and was referred to the sacrum and the umbilicus and down the inner side of the thighs. She was engaged in aircraft production, and was always compelled to stay home for at least two days during each menstrual period. During September and October, 1943, she was taking one tablet of "Vibex" with nicotinic acid three times a day, and the succeeding menstrual periods were of such a nature as not to compel her to absent herself from her work.

Case XI.—A single girl, aged twenty-five years, had suffered from painful menstrual periods since puberty. Her menstruation was peculiar, in that within an hour of commencing the flow stopped and recommenced in about six hours, when large dark-coloured clots were voided. This was the painful stage, and lasted approximately ten to fifteen hours. The pain came and went in spasms during that time. From then owards there was no pain. In the interim between September 2 and 16, 1944, she took one tablet of "Vibex" with nicotinic acid three times a day. Menstruation commenced on September 26. As previously, it started, stopped and restarted; but the clots were not dark and the pain lasted for only one and a half hours. She took the tablets again from October 1 to 19 and menstruated again on October 27. This time the pain lasted for one hour, and the starting, stopping and restarting mechanism was lost. Since then she has not complained of pain at the time of her menstrual periods.

Case XII.—Miss Y.L., of Tasmania, aged seventeen years, complained of severe colicky pain in the suprapubic area and down the inner sides of both legs, associated with headache, loss of appetite, extreme irritability and occasionally vomiting persisting from twenty-four hours to forty-eight hours before the established onset of the flow. She was admitted to hospital for curettage in September, 1945. She was discharged on her admission and received nicotinic acid therapy combined with œstrone (to be described later). The October menstrual period was characterized by loss of distressing constitutional disturbances, and the pain, which was still acute, lasted for only two hours. The combined treatment was continued for one more month, and the November, December and January menstrual periods caused the patient no pain or accompanying distressing symptoms. There was a loss of ten pounds in weight in four months.

Combination of Œstrone and Nicotinic Acid Therapy in Dysmenorrhœa.

Of the fifteen patients selected, (i) five received only œstrone (one milligramme three times a day) from the first day of the flow for fourteen days; four noticed no effect over three months; (ii) five received only nicotinic acid (fifty milligrammes three times a day) from the first day of the flow for sixty days; there was little or no effect at the end of the first month and a better response at the end of the second month, and results were good from the third month onwards; (iii) five received combined œstrone and nicotinic acid treatment for sixty days; in these cases the response was immediate.

From the above cases it is apparent that whilst œstrone has a dubious effect and nicotinic acid alone has a delayed effect, the combination of the two in all cases produced a positive result in a shorter time from the beginning of treatment.

Whenever possible, pelvic examinations were made to exclude any pathological condition; but if the patient was virginal, this was not done.

Conclusion.

From the experiments on the guinea-pigs and from the clinical studies, it would appear that the ovaries respond to the influence of nicotinic acid. That this response occurs only in cases in which the ovary is not functioning normally, is evidenced by the fact that there is no appreciable difference in the duration, quantity or quality of the menstrual flow in women whose menstrual flow is normal in duration, quantity and quality, and who have received nicotinic acid therapy.

When the ovary is under-functioning, then the effect of nicotinic acid is most pronounced; this has been demonstrated in the case of primary amenorrhœa due to ovarian defect, and in the case of hypomenorrhœa. Whether this influence is directly upon the epithelial elements of the ovary, and specifically stimulates their growth and development, or whether it simulates the properties of a hormone and stimulates the immature or under-functioning primordial follicles through the anterior lobe of the pituitary gland, or whether its influence is through the autonomic nervous system, are questions I cannot answer.

Two points in particular are to be noted: (i) that a rapid loss of weight was experienced by the obese subjects whilst they were receiving nicotinic acid; (ii) that when œstrone and nicotinic acid are combined their function is enhanced. This phenomenon occurs also with parathormone and vitamin *D* in their action on calcium metabolism, and provides an interesting link between the properties of hormones and vitamins.

Acknowledgements.

In conclusion, I am particularly grateful to Dr. McQuiggan, lecturer in endocrinology, University of Sydney, and to Major-General F. A. Maguire, lecturer in gynæcology, each of whom helped considerably with this work. My thanks are also due to Dr. Rushworth, of the Marrickville District Hospital, for making sections and staining slides, and to Dr. W. T. Gerdes, of the Royal North Shore Hospital, Sydney, for his assistance in the early stages of the experiment. I am also indebted to Dr. J. B. G. Muir and Dr. Campbell Duncan, of the Royal Hobart Hospital, and to Dr. C. L. Park, of the Department of Public Health, Hobart. To my patients, who acted as human guinea-pigs and experienced many inconveniences, I am deeply indebted.

ACCEPTABLE WORDS: QUOTATIONS WITH A MEDICAL BEARING.

By J. B. Cleland,
Marks Professor of Pathology, University of Adelaide.

In Ecclesiastes the preacher sought to find out acceptable words. And acceptable words are ever a pleasure to read, whether they are Shakespeare's linked sweetness, or the beautiful phraseology of the Authorized Version of the

Bible, or the gems that are to be found scattered through the writings of the masters of our language. Amongst these are not a few with a definitely medical bearing, and even in works on purely medical subjects acceptable words in harmonious association are not unknown. As these have delighted me from time to time and I turn again to them with renewed pleasure, it seemed worth while to bring together random notes made over many years, so that others may enjoy them as well as myself.

The Hippocratic Oath.

"I swear by Apollo the physician, and Æsculapius, and Health, and All-heal, and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation—to reckon him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this Art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none others. I will follow that system of regimen which, according to my ability and judgement, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to produce abortion. With purity and with holiness I will pass my life and practise my Art. I will not cut persons labouring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and, further, from the seduction of females or males, of freemen and slaves. Whatever, in connection with my professional practice or not in connection with it, I see or hear, in the life of men, which ought not be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the Art, respected by all men, in all times! But should I trespass and violate this Oath, may the reverse be my lot!"

—Francis Adam's translation.

Honour the Physician.

"Honour a physician with the honour due unto him for the uses which ye may have of him: for the Lord hath created him.

"For of the most High cometh healing, and he shall receive honour of the king.

"The skill of the physician shall lift up his head: and in the sight of great men he shall be in admiration.

"The Lord hath created medicines out of the earth; and he that is wise will not abhor them."

—Ecclesiasticus, Chapter XXXVIII, Verses 1 to 4.

"There are men and classes of men that stand above the common herd: the soldier, the sailor and the shepherd not unfrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing."

—Robert Louis Stevenson: dedication to "Poems".

"The medical profession occupies in the body social an unique position, and one prepotent of great good to the community at large. In the houses of the great, in the hovels of the poor, amongst the learned and the illiterate, the mentally sound, the morally degenerate and unfit, the doctor daily makes his round. All sides of life he sees, the many minor tragedies, grave crises, little comedies, unfathomable affections, unlooked-for kindliness of heart, and callous selfishness. All sorts and conditions of men it is his daily duty to study for guidance in his administration of the sick. When illness or trouble are present in the house, the outside mask of worldly life is discarded, and the true self stands revealed. The medical man, even beyond the clergyman, sees into the heart of the people, and knows and appreciates their desires. Moreover, he is skilled in weighing facts, and careful in drawing conclusions, he is accurate in summing-up, and broad-minded in the ways of the world. As a member of the most liberal of the professions, he sees what others would fail to grasp, and time and again his advice is sought by a friend, in the affairs of the world, not related to his work."

—"Medical Men and Social Problems", *The Australasian Medical Gazette*, June 20, 1911, page 331.

"A Physician in a great city seems to be the mere plaything of Fortune; his degree of reputation is for the most part casual; they that employ him know not his excellence; they that reject him know not his deficience."

—Samuel Johnson, quoted in *Nature*, August 26, 1920, page 812.

A Doctour of Phisike.

"With us ther was a DOCTOUR OF PHISIKE,
In all this world ne was ther non him like
To speke of phisike, and of surgerie:
For he was grounded in astronomie.

. . . . . .

He knew the cause of every maladie,
Were it of cold, or hote, or moist, or drie,
And wher engendred, and of what humour,
He was a veray parfite practisour."

—Geoffrey Chaucer, "The Canterbury Tales" ("The Prologue").

Let Us Praise Famous Men.

"Let us now praise famous men, and our fathers that begat us.

"The Lord hath wrought great glory by them through his great power from the beginning.

"Such as did bear rule in their kingdoms, men renowned for their power, giving counsel by their understanding, and declaring prophecies:

"Leaders of the people by their counsels, and by their knowledge of learning meet for the people, wise and eloquent in their instructions:

"Rich men furnished with ability, living peaceably in their habitations:

"All these were honoured in their generations, and were the glory of their times."

—Ecclesiasticus, Chapter XLIV, Verses 1 to 4, 6 and 7.

Bidding Prayer.

The following is the Bidding Prayer delivered by Professor J. L. Myres at the Commemorative Service at Liverpool Cathedral of the British Association for the Advancement of Science on Sunday, September 20, 1931. After each prayer the response of the Dean was "Bless ye the Lord", and of the congregation "Praise him and magnify him for ever". (*Nature*, October 3, 1931, page 573.)

"Ye shall remember those who in all times and in all places have devoted their gifts of intellect and imagination to interpret the laws of thought, the place of man in the universe, and the nature of reality;

"Such as were Aristotle, Da Vinci, Bacon, Descartes, and Kant.

"Ye shall remember all who have explored the properties of numbers, and the mysteries of time and space;

"Such as were Pythagoras, Archimedes, Newton, Leibnitz, Gauss, and Poincaré.

"Ye shall remember all who have determined the courses of the stars, the place among them of sun, moon, and this earth of ours, and have given to all those, whose business is in the great deep, sure guidance to the haven where they would be;

"Such as were Ptolemy, Copernicus, Kepler, Tycho Brahe, Holley, Herschel, and Huggins.

"Ye shall remember all whose profound vision and infinite patience have revealed the ever-changing uniformities of the great forces of Nature; and made light and sound, heat and cold, lightning, wind and flood subservient to the purposes of man;

"Such as were Galileo, Gilbert, Watt, Faraday, Joule, Clerk Maxwell, Rayleigh, Hertz and Parsons.

"Ye shall remember all who, not sparing life or fortune, set forth to find and win new homes for the multitude of our folk, to build the waste places of the earth, so that the desert should rejoice and blossom, and the men who stood far off might see a great light; for all travellers and explorers, and for those who were moved by great thought to send them forth, and to set down and make known their discoveries;

"Such as were Marco Polo, Prince Henry the Navigator, Christopher Columbus, Banks, Cook, Humboldt, Franklin, Livingstone, Nansen and Scott.

"Ye shall remember all who have set in order the lineage of all living things, animals and plants, observed their habits and haunts, their struggles and survivals throughout the long lapse of time, the wonderful variety, infinite beauty, and subtle adaptation of each to its proper life; their coming to birth and passing away; who have distinguished among them the friends and foes of man, and sought to diversify by human skill the manifold works of creation.

"Such as were Hippocrates, Galen, Linnæus, Cuvier, Lamarck, Darwin, Hooker, Huxley, and Mendel.

"Ye shall remember all who have applied the principles of the several sciences to the tillage of the soil, the avoidance of famine and pestilence, the breeding and sustenance of flocks and herds, and the abundant provision of our daily bread;

"Such as were Jethro Tull, Daubeny, Liebig, Lawes and Theiler.

"Ye shall remember all who, by their intimate study of the functions of life, have made plain the mysteries of many diseases and abated their ravages; and brought knowledge of our bodily frame to the better study of the mind in sickness and in health;

"Such as were Vesalius, Harvey, Hunter, Claude Bernard, Johannes Müller, Pasteur, and Helmholtz.

"Ye shall remember all whose contemplation of the divers races of mankind, the manner of their lives, the ordering of their societies, their customs and beliefs, and their manifold dealings each with his neighbour, for the enjoyment of Nature's gifts and the fruits of reason and toil, to the increase of the wealth of nations, have contributed to mutual understanding among the peoples and peace on earth among men of good will;

"Such as were Bodin, Locke, Montesquieu, Adam Smith, Quételet, Galton and Tyler."

Religio Medici.

The following excerpts are taken from "Religio Medici", by Sir Thomas Browne.

"Thus we are men, and we know not how; there is something in us that can be without us, and will be after us, though it is strange that it hath no history what it was before us, nor cannot tell how it entered in us." (Part I, Section 36.)

Of meeting death:

"This makes me naturally love a soldier, and honour those tattered and contemptible regiments, that will die at the command of a sergeant." (Section 38.)

Nature: "That universal and publick manuscript, that lies expansed unto the eyes of all." (Section 16.)

"I feel not in me those sordid and unchristian desires of my profession; I do not secretly implore and wish for plagues, rejoice at famines, revolve ephemerides and almanacks in expectation of malignant aspects, fatal conjunctions, and eclipses. I rejoice not at unwholesome springs nor unseasonable winters: my prayer goes with the husbandman's; I desire everything in its proper season, that neither men nor the times be out of temper. Let me be sick myself, if sometimes the malady of my patient be not a disease unto me. I desire rather to cure his infirmities than my own necessities. Where I do him no good, methinks it is scarce honest gain, though I confess 'tis but the worthy salary of our well intended endeavours. I am not only ashamed but heartily sorry, that, besides death, there are diseases incurable; yet not for my own sake or that they be beyond my art, but for the general cause and sake of humanity, whose common cause I apprehend as mine own. And, to speak more generally, those three noble professions which all civil commonwealths do honour, are raised upon the fall of Adam, and are not any way exempt from their infirmities. There are not only diseases incurable in physick, but cases indissolvable in law, vices incorrigible in divinity." (Part II, Section 9.)

"Now for my life, it is a miracle of thirty years, which to relate, were not a history, but a piece of poetry, and would sound to common ears like a fable. For the world, I count it not an inn, but an hospital; and a place not to live, but to die in." (Part II, Section 11.)

The Infancy of Saint Augustine.

"Thus there received me the comforts of woman's milk . . . For then I knew but to suck; to repose in what pleased, and cry at what offended my flesh; nothing more.

"Afterwards I began to smile; first in sleep, then waking: for so it was told me of myself, and I believed it; for we see the like in other infants, though of myself I remember it not. Thus, little by little, I became conscious where I was; and to have a wish to express my wishes to those who could content them, and I could not; for the wishes were within me, and they without; nor could they by any sense of theirs enter within my spirit. So I flung about at random limbs and voice, making the few signs I could, and such as I could, like, though in truth very little like, what I wished. And when I was not presently obeyed (my wishes being hurtful or unintelligible), then I was indignant with my elders for not submitting to me, with those owing me no service, for not serving me; and avenged myself on them by tears. Such have I learnt infants to be from observing them; and, that I was myself such, they, all unconscious, have shewn me better than my nurses who knew it."

—"Confessions of Saint Augustine",
Book I, paragraphs 7 and 8.

Sleep.

"And, more to lulle him in his slumber soft,
A trickling streame from high rock tumbling downe,
And ever-drizling raine upon the loft,
Mixt with a murmuring winde, much like the sowne
Of swarming bees, did caste him in a swowne.
No other noyse, nor peoples troublous cryes,
As still are wont t' annoy the walled towne,
Might there be heard: but carelesse Quiet lyes,
Wrapt in eternall silence farre from enimyes."

—Edmund Spenser: "The Faerie Queene",
Book I, Canto 1, line 41.

"Now blessings light on him that first invented this same sleep; it covers a man all over, thoughts and all, like a cloak; it is meat for the hungry, drink for the thirsty, heat for the cold, and cold for the hot. It is the current coin that purchases all the pleasures of the world cheap; and it is the balance that sets the king and the shepherd, the fool and the wise man."

—Cervantes.

Right Judgement and Clinical Instinct.

"The one talent which is most worth all other talents put together in all human affairs is the talent of judging right upon imperfect materials, the talent if you please of guessing right. It is a talent which no rules will ever teach, and which even experience does not always give. It often coexists with a good deal of slowness and dulness, and with a very slight power of expression. All that can be said about it is, that to see things as they are, without exaggeration or passion, is essential to it; but how can we see things as they are? Simply by opening our eyes and looking with whatever power we have. All really important matters are decided, not by a process of argument worked out from adequate premisses to a necessary conclusion, but by making a wise choice between several possible views."

—Stephen's "Liberty", *et cetera*, page 332; quoted by R. M. Hutchison, *British Medical Journal*, March 3, 1928, page 335, who adds the following:

"What is sometimes called 'clinical instinct' is, in truth, simply a power of rapid instinctive judgement, and it may be lacking in men of high intellectual ability and present to a marked degree in those who are in other respects mentally their inferiors. It seems to be much the same as 'common sense' and closely allied to a sense of humour, which is the same thing as a sense of proportion. Those who lack it are apt, in making a diagnosis, to fail to see the wood for the trees."

The Valley of Dry Bones.

"The hand of the Lord was upon me, and carried me out in the Spirit of the Lord, and set me down in the midst of the valley which was full of bones.

"And caused me to pass by them round about: and, behold, there were very many in the open valley; and, lo, they were very dry.

"And he said unto me, Son of man, can these bones live? And I answered, O Lord God, thou knowest.

"Again he said unto me, Prophesy upon these bones, and say unto them, O ye dry bones, hear the word of the Lord.

"Thus saith the Lord God unto these bones, Behold, I will cause breath to enter into you, and ye shall live:

"And I will lay sinews upon you, and will bring up flesh upon you, and cover you with skin, and put breath in you, and ye shall live; and ye shall know that I am the Lord.

"So I prophesied as I was commanded: and as I prophesied there was a noise, and, behold, a shaking, and the bones came together, bone to his bone.

"And when I beheld, lo, the sinews and the flesh came up upon them, and the skin covered them above; but there was no breath in them.

"Then said he unto me, Prophesy unto the wind, prophesy, son of man, and say to the wind, Thus saith the Lord God, Come from the four winds, O breath, and breathe upon these slain, that they may live.

"So I prophesied as he commanded me, and the breath came into them, and they lived, and stood up upon their feet, an exceeding great army."

—Ezekiel, Chapter XXXVII, Verses 1 to 10.

The Anatomist's Hymn.

"Not in the world of light alone,
Where God has built His blazing throne,
Nor yet alone in earth below,
With belted seas that come and go,
And endless isles of sunlit green,
Is all thy Maker's glory seen:
Look in upon thy wondrous frame,—
Eternal wisdom still the same!

"The smooth, soft air, with pulse-like waves,
Flows murmuring through its hidden caves,
Whose streams of brightening purple rush
Fired with a new and livelier blush,
While all their burden of decay
The ebbing current steals away,
And red with Nature's flame they start
From the warm fountains of the heart.

"No rest that throbbing slave may ask,
For ever quivering o'er his task,
While far and wide a crimson jet
Leaps forth to fill the woven net
Which in unnumbered crossing tides
The flood of burning life divides,
Then kindling each decaying part
Creeps back to find the throbbing heart.

"Then mark the cloven sphere that holds
All thought in its mysterious folds,
That feels sensation's faintest thrill,
And flashes forth the sovereign will:
Think on the stormy world that dwells
Locked in its dim and clustering cells!
The lightning gleams of power it sheds
Along its hollow glassy threads."

—Oliver Wendell Holmes: "The Autocrat of the Breakfast-Table".

Chlorosis.

". . . daffodils,
That come before the swallow dares, and take
The winds of March with beauty; violets dim,
But sweeter than the lids of Juno's eyes
Or Cytherea's breath; pale primroses,
That die unmarried ere they can behold
Bright Phœbus in his strength—a malady
Most incident to maids; bold oxlips, and
The crown-imperial; lilies of all kinds . . ."

—Shakespeare: *The Winter's Tale*, Act iv, Scene 3.

[Buckwill in "Shakespeare's Medical Knowledge", page 13, considers that this complaint was "consumption".]

". . . She never told her love,
But let concealment, like a worm i' the bud,
Feed on her damask cheek; she pined in thought;
And, with a green and yellow melancholy,
She sat like patience on a monument,
Smiling at grief."

—Shakespeare: *Twelfth Night*, Act ii, Scene 4.

[Buckwill, at page 122, gives other references to chlorosis.]

Infection.

"This royal throne of kings, this scepter'd isle,
This earth of majesty, this seat of Mars,
This other Eden, demi-paradise;
This fortress built by Nature for herself
Against infection and the hand of war;
This happy breed of men, this little world,
This precious stone set in the silver sea,

. . . . . .

This blessed plot, this earth, this realm, this England."

—Shakespeare: *The Life and Death of King Richard II*, Act ii, Scene 1.

Pilgrim's Progress.

The following excerpts are taken from "The Pilgrim's Progress", by John Bunyan.

The Pilgrims Sup with Gaius.

"So supper came up; and first, a heave-shoulder, and a wave-breast were set on the table before them . . .

"The next they brought up was a bottle of wine, red as blood . . .

"The next was a dish of milk well crumbled; but Gaius said, Let the boys have that, that they may grow thereby . . .

"Then they brought them up a dish of apples, and they were very good tasted fruit . . .

"They were presented with another dish, and it was a dish of nuts. (Song. VI, II.) Then said some at the table, Nuts spoil tender teeth, especially the teeth of children."

The Calves of My Lips.

Mercy at the Gate with "a most cruel dog thereabout".

"At last he came down to them again, and Mercy fell on the ground . . . and said Let my Lord accept of the sacrifice of praise which I now offer unto him with the calves of my lips."

Mr. Skill: Intestinal Colic.

"Now Matthew, the eldest son of Christiana, fell sick, and his sickness was sore upon him, for he was much pained in his bowels, so that he was with it, at times, pulled as it were both ends together. There dwelt also not far from thence, one Mr. Skill, an ancient and well-approved physician . . . When he was entered the room, and had a little observed the boy, he concluded that he was sick of the gripes . . . So he made him a purge, but it was too weak . . . When Mr. Skill had seen that that purge was too weak, he made him one to the purpose . . . When this potion was prepared, and brought to the boy, he was loath to take it, though torn with the gripes as if he should be pulled in pieces. . . . It goes against my stomach, said the boy . . .

"So when the boy was healed, Christiana asked Mr. Skill, saying, Sir, what will content you for your pains and care to and of my child? And he said, You must pay the Master of the College of Physicians, according to rules made in that case and provided."

Mercy and the Shepherds.

"But Mercy being a young and breeding woman, longed for something that she saw there, but was ashamed to ask. Her mother-in-law then asked her what she ailed; for she looked as one not well. Then said Mercy, There is a looking-glass hangs up in the dining-room, off which I cannot take my mind: if, therefore, I have it not, I think I shall miscarry."

Use of the Word Caul, Meaning a Cap, Covering.

Christiana's regrets for the treatment of her husband—"rent the caul of her heart in sunder".

The Cantankerous Man.

"There's Morbid, all bile and verjuice and nerves,
Where other people would make preserves,
He turns his fruit into pickles:
Jealous, envious and fretful by day,
At night, to his own sharp fancies a prey,
He lies like a hedgehog rolled up the wrong way,
Tormenting himself with his prickles."

—Thomas Hood: "Miss Kilmansegg and her Golden Leg".

Dr. John Rutty's Diary (1753-1765).

"Tenth month, 1753.

"23.—Indulgence in bed an hour too long.

"Twelfth month, 17.—An hypochondriack obnubilation from wind and indigestion.

"Ninth month, 28.—An over-dose of whisky.

"29.—A dull, cross, cholerick day.

"First month, 1757, 22.—A little swinish at dinner and repast. Dogged on provocation.

"Second month, 5.—Very dogged or snappish.

"14th.—Snappish on fasting.

"26.—Cursed snappishness to those under me, on a bodily indisposition.

"Third month, 11.—On a provocation, exercised a dumb resentment for two days, instead of scolding.

"22.—Scolded too vehemently.

"23.—Dogged again.

"Fourth month, 29.—Mechanically and sinfully dogged."

—From "A Spiritual Diary and Soliloquies", by Dr. John Rutty, quoted by Boswell in *The Lancet*, October 19, 1907, page 1073.

A Quack Remedy.

"The introduction of this preparation and its advent into this country was heralded by a flourish of advertisement, not overloaded with, but still not altogether devoid of, that picturesque hyperbole and flamboyant mendacity which in general seem to be inseparable adjuncts to the exploitation of a nerve tonic, a hair restorer or an aperient."

—Judgement of Mr. Justice Eve, *British Medical Journal*, June 7, 1913, page 1240.

Duke of Lauderdale's Heart.

"All these things, together with a load of age and of a vast bulk, sunk Duke Lauderdale, so that he died that summer [in 1682]. His heart seemed quite spent: there was not left above the bigness of a walnut of firm substance: the rest was spungy, liker the lungs than the heart."

—Gilbert Burnet: "History of His Own Time", Volume II, page 340.

Inoculation for the Smallpox.

"The devastation of the small-pox when it visits places where it comes seldom, is well known. He (the Laird) has disarmed it of its terror at Muach, by innoculating eighty of its people. The expence was two shillings and sixpence a head."

—Samuel Johnson: "A Journey to the Western Islands", 1773.

Cadaveric Rigidity.

A good example of the almost instantaneous onset of cadaveric rigidity is given by A. W. Kinglake in "The Invasion of the Crimea", Volume V, page 220, in describing the Battle of Balaclava, in which he gives the following account of the death of Captain Nolan:

"But a Russian shell bursting on the right front of Lord Cardigan now threw out a fragment which met Nolan full on the chest and tore a way into his heart. The sword dropt from his hand; but the arm with which he was waving it the moment before still remained high uplifted in the air, and the grip of the practised horseman remaining as yet unrelaxed still held him firm in his saddle. Missing the perfect hand of his master, and finding the accustomed governance now succeeded by dangling reins, the horse all at once wheeled about, and began to gallop back upon the front of the advancing brigade. Then from what had been Nolan—and his form was still erect in the saddle, his sword-arm still high in the air—there burst forth a cry so strange and appalling that the hearer who rode the nearest to him has always called it 'unearthly'. The firm-seated rider, with arm uplifted and stiff, could hardly be ranked with the living. The shriek men heard rending the air was scarce other than the shriek of a corpse. This dead horseman rode on till he had passed through the interval of the 13th Light Dragoons. Then at last he dropt out of the saddle."

Scurvy.

"Soon after our passing Straits Le Maire, the scurvy began to make its appearance amongst us . . . The mortality went on increasing, and the disease extended itself so prodigiously, that after the loss of above two hundred men, we could not at last muster more than six fore-mast men in a watch capable of duty.

"This disease, so frequently attending all long voyages, and so particularly destructive to us, is surely the most singular and unaccountable of any that affects the human body. For its symptoms are inconstant and innumerable, and its progress and effects extremely irregular: for scarcely any two persons have the same complaints, and where there hath been some conformity in the symptoms, the order of their appearance has been totally different. However, though it frequently puts on the form of many other diseases, and is therefore not to be described by any exclusive and infallible criterions; yet there are some symptoms which are more general than the rest; and therefore, occurring the oftenest, deserve a more particular enumeration. These common appearances are large discoloured spots dispersed over the whole surface of the body, swelled legs, putrid gums, and, above all, an extraordinary lassitude of the whole body, especially after any exercise, however in-considerable; and this lassitude at last degenerates into a proneness to swoon on the least exertion of strength, or even on the least motion.

"This disease is likewise usually attended with a strange dejection of the spirits, and with shiverings, tremblings, and a disposition to be seized with the most dreadful terrors on the slightest accident. Indeed it was most remarkable, in all our reiterated experience of this malady, that whatever discouraged our people, or at any time damped their hopes, never failed to add new vigour to their distemper; for it usually killed those who were in the last stage of it, and confined those to their hammocks who were before capable of some kind of duty; so that it seemed as if alacrity of mind, and sanguine thoughts, were no contemptible preservatives from its fatal malignity.

"But it is not easy to complete the long roll of the various concomitants of this disease; for it often produced putrid fevers, pleurisies, the jaundice, and violent rheumatic pains, and sometimes it occasioned an obstinate costiveness, which was generally attended by a difficulty of breathing; and this was esteemed the most deadly of all the scorbutic symptoms; at other times the whole body, but more especially the legs, were subject to ulcers of the worst kind, attended with rotten bones, and such a luxuriancy of fungous flesh, as yielded no remedy. But a most extraordinary circumstance, and what would be scarcely credible upon any single evidence, is, that the scars of wounds which had been for many years healed, were forced open again by this virulent distemper: of this, there was a remarkable instance in one of the invalids on board the Centurion, who had been wounded about fifty years before at the battle of the Boyne; for though he was cured soon after, and had continued well for a great number of years past, yet on his being attacked by the scurvy, his wounds, in the progress of his disease, broke out afresh, and appeared as if they had never been healed: nay, what is still more astonishing, the callus of a broken bone, which had been completely formed for a long time, was found to be hereby dissolved, and the fracture seemed as if it had never been consolidated. Indeed, the effects of this disease were in almost every instance wonderful; for many of our people, though confined to their hammocks, appeared to have no inconsiderable share of health, for they ate and drank heartily, were cheerful, and talked with much seeming vigour, and with a loud strong tone of voice; and yet on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they have immediately expired; and others, who have confided in their seeming strength, and have resolved to get out of their hammocks, have died before they could well reach the deck; and it was no uncommon thing for those who were able to walk the deck, and to do some kind of duty, to drop down dead in an instant, on any endeavours to act with their utmost vigour: many of our people having perished in this manner during the course of this voyage."

—George Anson: Anson's "Voyage Round the World", Book I, Chapter x, page 31.

1740-1744. After doubling Cape Horn; account by "Richard Walter, M.A." on title page, but probably by "Benjamin Robins, a celebrated engineer-officer".

Scurvy on the Voyage to Goa in India in 1579.

"And by reason of the long navigation and want of food and water they fall into sundry diseases; their gums wax great and swell and they are fain to cut them away, their legs swell and all the body becometh sore, and so benumbed that they cannot stir hand nor foot, and so they die for weakness. Others fall into fluxes and agues and die thereby."

—Letter of the Jesuit Thomas Stevens to his father (J. C. Locke: "The First Englishmen in India", page 27).

The Gold Road—Across the Isthmus of Panama. Yellow Fever and Malaria.

"It was from a hill on the Isthmus that de Balboa discovered the Pacific Ocean. From a like height Sir Francis Drake gazed upon that alluring sea—the first Englishman whose eyes had ever been greeted by the sight of it.

"It was at Nombre de Dios on the Isthmus that Drake first made himself "redoubtable to the Spaniards", while the most famous deeds of the Buccaneers and their most venturesome assaults belong to the annals of this fever-stricken land.

"Across the Isthmus was carried year after year, partly by mule trains and partly by river, the incredible wealth of Peru.

"During all these toiling years, Death has stood in the narrow crossing and has there exacted toll from whomsoever passed by the way.

"The loss of life involved in the construction of the little line of rail was alone appalling. The iron road moved across the land like the car of Juggernaut, crushing to death all living things it came upon. It has been said, and probably with truth, that every tie or sleeper beneath the rails cost a human life.

"Enriquex de Guzman, who came into these parts in 1534, asserts that out of every hundred men who went to Peru for gold, eighty never returned again.

"In like manner, during the gold craze in California, the number who met with death on the Isthmus, within sight of the sea that was to carry them and their nuggets home, would have filled many a happy town.

"Last of all, during the construction of the canal by the French Company, men died yearly not in hundreds but in thousands. In truth there is no burial ground comparable with this on the face of the earth, for the dead lie thicker than the trees."

—Sir Frederick Treves: "The Cradle of the Deep", page 310.

Exposure to the Tropical Sun.

"One reason why I could not go quite naked was, I could not bear the heat of the sun so well when quite naked, as with some clothes on—nay, the very heat frequently blistered my skin; whereas, with a shirt on, the air itself made some motion, and, whistling under the shirt, was two-fold cooler than without it; no more could I ever bring myself to go out in the heat of the sun without a cap or a hat; the heat of the sun beating with such violence as it does in that place, would give me the headache presently, by darting so directly on my head, without a cap or hat on, so that I could not bear it; whereas, if I put on my hat, it would presently go away."

—Daniel Defoe: "The Life and Adventures of Robinson Crusoe", page 124.

Ambroise Paré and the Battlefield.

"We saw more than half a league round us the earth all covered with the dead; and hardly stopped there, because of the stench of the dead men and their horses; and so many blue and green flies rose from them, bred of the moisture of the bodies and the heat of the sun, that when they were up in the air, they hid the sun. It was wonderful to hear them buzzing; and where they settled, there they infected the air, and brought the plague with them. *Mon petit maistre*, I wish you had been there with me, to experience the smells, and make report thereof to them that were not there."

—Stephen Paget: "Journeys in Divers Places", page 94 (Battle of Saint Quentin, 1557).

"The camp broken, I returned to Paris, with my gentleman whose leg I had cut off; I dressed him and God cured him. I sent him to his house, merry, with a wooden leg, and he was content saying that he had got off cheap, not to have been miserably burned to stop the blood, as you write in your book, *mon petit maistre*."

—Francis R. Packard: "Life and Times of Ambroise Paré", "Apology and Treatise", page 189.

Of Monsieur de Pienne: "He was trepanned at the side of the temporal muscle, on the frontal bone, I dressed him, with other surgeons, and God cured him, and to-day he is still living, thank God."

—Francis R. Packard: "Life and Times of Ambroise Paré", "Apology and Treatise", page 198.

The King's Evil.

"It was suggested by some confident spirits that the Queen's title should be tested by affording to her the opportunity of proving whether she inherited the one miraculous gift peculiar to the legitimate occupant of the English throne—it had been bestowed on the holy saint Edward the Confessor, and was intrusted to his successors as a testimony that God sanctioned the right of inheritance claimed by them. Would her Majesty condescend to touch for the king's evil? It was done accordingly. From a crowd of applicants for the distinction of being handled by royalty, a selection by skilled physicians was made of those hapless beings who, beyond the aid of physical remedies, were the proper objects of the miraculous intervention of the sovereign."

Of these Samuel Johnson was one, and he remembered the ceremony. The touch was found to be successful. The announcement that it was so gladdened many a loyal subject and ardent churchman, rejoicing and trembling in mysterious awe at the wonderful way of Providence. This was no technical confirmation of a parliamentary title—it was God's doing, and wonderful in their sight.

"Bath, October 6th—A great number of persons coming to this place to be touched by the Queen's Majesty for the evil, her Majesty commanded Dr. Thomas Gardner, her chief surgeon, to examine them all particularly, which accordingly was done by him, of whom but thirty appeared to have the evil, which he certified by tickets as is usual, and these thirty were all touched that day."

—J. H. Burton: "The Reign of Queen Anne", Volume II, page 202.

Old Age.

"Remember now thy Creator in the days of thy youth, while the evil days come not, nor the years draw nigh, when thou shalt say, I have no pleasure in them;

"While the sun, or the light, or the moon, or the stars, be not darkened; nor the clouds return after the rain:

"In the day when the keepers of the house shall tremble, and the strong men shall bow themselves, and the grinders cease because they are few, and those that look out of the windows be darkened,

"And the doors shall be shut in the streets, when the sound of the grinding is low, and he shall rise up at the voice of the bird, and all the daughters of music shall be brought low:

"Also when they shall be afraid of that which is high, and fears shall be in the way, and the almond-tree shall flourish, and the grasshopper shall be a burden, and desire shall fail; because man goeth to his long home, and the mourners go about the streets:

"Or ever the silver cord be loosed, or the golden bowl be broken, or the pitcher be broken at the fountain, or the wheel broken at the cistern.

"Then shall the dust return to the earth as it was; and the spirit shall return unto God who gave it."

Ecclesiastes, Chapter XII, Verses 1 to 7.

"For to degenerate and die is as normal as to be developed and live; the expansion of growth and the full strength of manhood are not more natural than the decay and feebleness of a timely old age: not more natural, because not more in accordance with constant laws, as observed in ordinary conditions. As the development of the whole being, and of every element of its tissues, is according to certain laws, so is the whole process regulated by which all that has life will, as of its own workings, cease to live. And as in healthy development and growth all parts concur in equivalent changes, so in the natural decline of life do all parts change in equivalent degenerations, till all together cease to be capable of living. For it is natural to become feeble and infirm, to wither and shrivel, to have dry, dusky, wrinkled skins and greasy brittle bones, to have weak fatty hearts, blackened inelastic lungs and dusky thin stomachs, and to have every function of life discharged feebly, and, as it were, wearily; and then, with powers gradually decreasing, to come to a time when, all the functions of bodily life ceasing to be discharged, death, without pain or distress, ensues."

—Sir James Paget: "Lectures on Surgical Pathology", Third Edition, 1870, page 70.

"Some people as they grow old seem only to wither and dry up; sharp-featured, shrivelled, spinous old folk, yet withal wiry and tough, clinging to life, and letting death have them, as it were, by small instalments slowly paid. Such are the 'lean and slippered pantaloons'; and their 'shrunk shanks' declare the pervading atrophy.

"Others, women more often than men, as old and as ill-nourished as these yet make a far different appearance. With these the first sign of old age is that they grow fat; and this abides with them till, it may be, in a last illness sharper than old age, they are robbed even of their fat. These, too, when old age sets in, become pursy, short-winded, pot-bellied, pale, and flabby; their skin hangs, not in wrinkles, but in rolls; and their voice, instead of rising 'towards childish treble', becomes gruff and husky."

—Sir James Paget: "Lectures on Surgical Pathology", Third Edition, 1870, page 82.

Falstaff Before the Chief Justice.

"*Chief Justice.* Do you set down your name in the scroll of youth, that are written down old with all the characters of age? Have you not a moist eye? a dry hand? a yellow cheek? a white beard? a decreasing leg? an increasing belly? Is not your voice broken? your wind short, your chin double? your wit single? and every part about you blasted with antiquity and will you yet call yourself young? Fie, fie, fie, Sir John!"

—Shakespeare: Second Part of *King Henry IV*, Act I, Scene 2.

Death of Falstaff.

"*Hostess.* . . . he is so shaken of a burning quotidian tertian that it is most lamentable to behold."

—Shakespeare: *King Henry V*, Act II, Scene 1.

"*Hostess.* . . . 'A made a finer end, and went away, an it had been any christom child; 'a parted even just between twelve and one, even at the turning o' the tide: for after I saw him fumble with the sheets, and play with flowers, and smile upon his fingers' ends, I knew there was but one way; for his nose was as sharp as a pen, and 'a babbled of green fields. *How now, Sir John!* quoth I: *what, man! be o' good cheer.* So 'a cried out—*God, God, God!* three or four times. Now I, to comfort him, bid him 'a should not think of God; I hoped there was no need to trouble himself with any such thoughts yet. So 'a bade me lay more clothes on his feet; I put my hand into the bed and felt them, and they were as cold as any stone; then I felt to his knees, and so upward, and upward, and all was as cold as any stone."

—Shakespeare: *King Henry V*, Act II, Scene 3.

A METHOD FOR THE REMOVAL OF TONSILS AND ADENOIDS UNDER LOCAL ANÆSTHESIA WITH THE PATIENT IN THE RECUMBENT POSITION.

By R. H. Bettington,
Sydney.

The technique to be described was developed in the Australian Imperial Force in 1940, and has been used for the last two years at the 113th Australian General Hospital. A similar method may have been employed previously by others, but I have seen no description of it published.

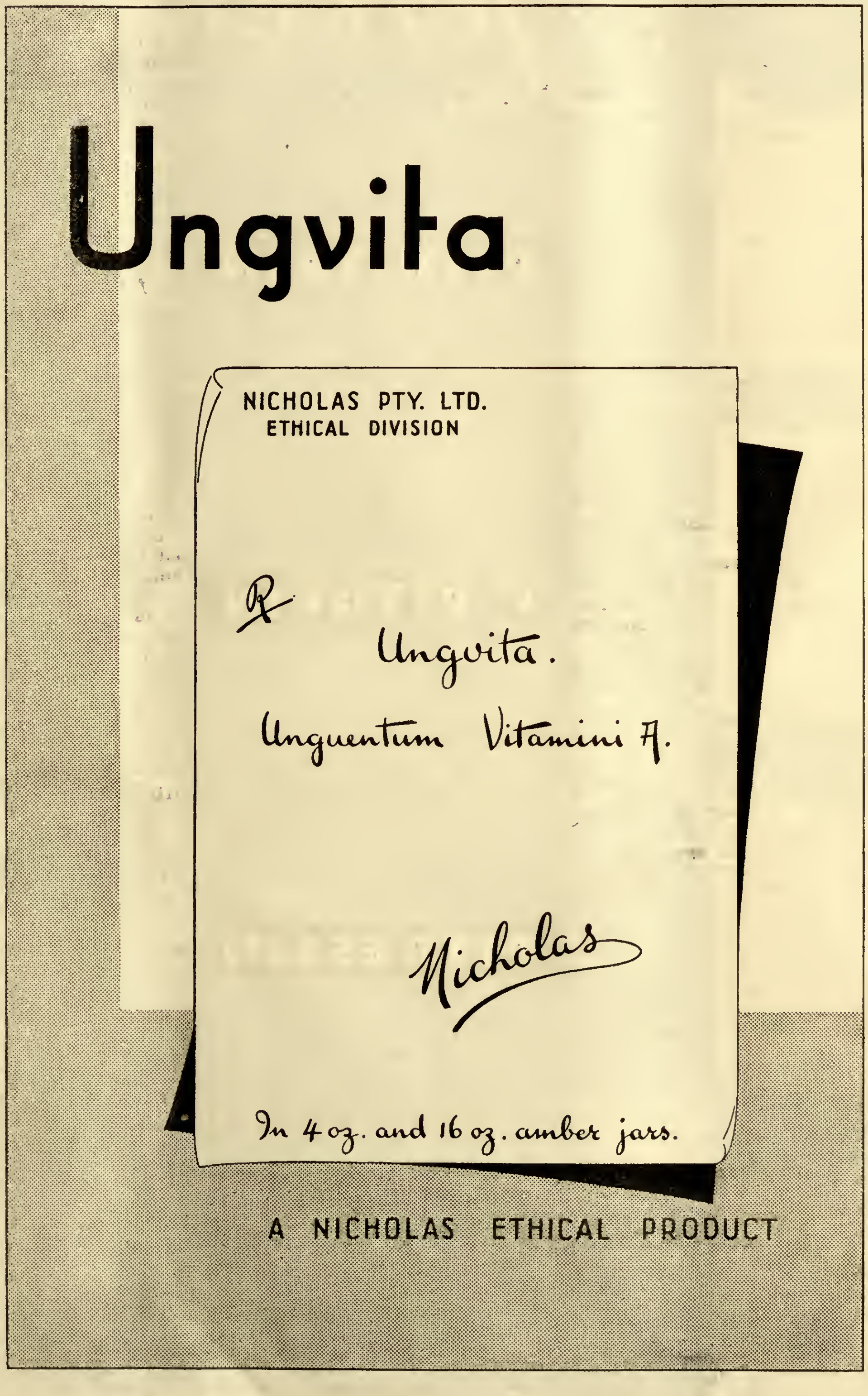
Dr. D. G. Perrett, of Newcastle, first called my attention to the fact that the Boyle Davis gag can be utilized for local anæsthesia. I tried it first when attached to the 2/1 Australian General Hospital at Gaza Ridge, Palestine. A full description of the whole procedure, actual operative details being omitted, is set out below.

Premedication.

All patients are given thirty grains of potassium bromide and ten minims of syrup of chloral on the evening previous to operation. Prior to operation, any one of the following schemes of dosage may be used:

1. One-quarter of a grain of morphine and one one-hundredth of a grain of hyoscine one hour before operation.

2. One-twelfth of a grain of morphine and one one-hundred-and-fiftieth of a grain of hyoscine two hours before operation. One-quarter of a grain of morphine and one one-hundred-and-fiftieth of a grain of hyoscine one hour before operation.



Vitamin Therapy

Ungvita

NICHOLAS PTY. LTD.
ETHICAL DIVISION

℞

Ungvita.

Unguentum Vitamini A.

Nicholas

In 4 oz. and 16 oz. amber jars.

A NICHOLAS ETHICAL PRODUCT

Selective
POST-PITUITARY ACTION

for pressor and oxytocic effects

★ **PITUITRIN**

Original aqueous extract of the posterior lobe of the pituitary gland developed in the Research Laboratories of Parke, Davis & Co. It contains both the pressor and oxytocic factors and is widely used in surgery and obstetrics.

for oxytocic effect

★ **PITOCIN**

(alphahypophamine)

Aqueous extract of the posterior lobe of the pituitary gland containing the oxytocic principle, but is relatively free from the pressor and antidiuretic principles. Indicated in cases in which stimulation of the uterine musculature solely is desired.

for pressor and antidiuretic effects

★ **PITRESSIN**

(betahypophamine)

Aqueous extract of the posterior lobe of the pituitary gland containing the pressor and antidiuretic principles, but is substantially free of the oxytocic principle Indicated in the control of diabetes insipidus, increasing the muscular activity of the bladder and intestinal tract, and to raise the blood pressure.

Parke, Davis & Company

(INC. U.S.A.)

SYDNEY

Mil.
PITUITR
Mil.
PITUITR

1 Mil.
GLASEPTIC AMPOULE
No. 160
PITOCIN
(Alpha Hypophamine)
Chloretone 0.5%
PITOCI
AE3595

1 Mil.
GLASEPTIC AMPOULE
No. 161
PITRESSIN
(Beta Hypophamine)
Chloretone 0.5%
TRES
20 Units
AE250

3. One-sixth of a grain of morphine and one one-hundred-and-fiftieth of a grain of hyoscine two hours before operation. One-quarter of a grain of morphine and one one-hundred-and-fiftieth of a grain of hyoscine one hour before operation.

The body weight of the patient is the criterion for dosage. The first scheme is used for the majority of women and for small men, the second scheme for large women and for the majority of men, and the third scheme for men of exceptional size.

Pre-Operative Spraying.

Any local anæsthetic suitable for application to a mucosal surface may be used as a spray. It is applied from a spray having a swivel nozzle, with the patient sitting up. My own habit has been to use a mixture of 10% cocaine solution with a 1 in 1,000 solution of adrenaline hydrochloride, the relative proportions being as six is to four. Provided the patient is required to spit after every period of spraying—four or five puffs—the danger of cocaine reaction is negligible. The first spraying is done ten minutes before operation in the following order: (i) the dorsum of the tongue where the gag spatula is to exert pressure; (ii) the anterior tonsillar pillars of both sides; (iii) the post-nasal space, with the nozzle turned up; (iv) the lower tonsillar poles and the top of the glottis, with the nozzle turned down. If the upper jaw is edentulous, the gum surface, where the gag makes contact, should be sprayed.

The procedure is repeated five minutes after the first application; the patient is then prepared for operation.

Position of the Patient.

The patient is placed in the recumbent position, with a small pillow under the shoulders, so that the post-nasal space is at a lower level than the glottis. The height of this pillow will vary with the size of the patient and the length and flexibility of the neck. The Boyle Davis gag is now put in position with the spatula as near as possible to the mid-line, and the free end is kept elevated by a metal jack, or by a rectangular block of light wood, which can be cut to a suitable size. I use a set from which the anæsthetic pipes have been removed; thus more space is allowed for manipulation.

Injection.

All those who practise tonsillectomy under local anæsthesia will have their own preference for the solution to be used and the sites for injection. I use 15 to 20 millilitres of a 0·5% solution of "Novocain", 10 minims to the ounce of a 1 in 1,000 solution of adrenaline hydrochloride being added. The sites of injection, according to my plan, are as follows.

1. Attach a curved needle and give an injection along the posterior pillars and behind the upper and lower poles. Again with a curved needle give an injection under the mucosa of the anterior pillars and around the upper curve near the uvula.

2. Grasp each tonsil in turn with holding forceps and draw gently toward the mid-line, thus identifying the lateral border. With a straight needle make three injections behind the upper pole, the centre and the lower pole.

3. Still using a straight needle, give an injection through the lower pole into the base of the tongue.

Adenoids.

If adenoids are present, the injections are made with the curved needle before the tonsil operation has been commenced. The needle is introduced under the mucosa of the posterior naso-pharyngeal wall and pushed up towards the skull vertex until the point impinges on the bone of the skull base. The plunger is gently pushed in while the needle is being slowly withdrawn. This injection is made three times in the mid-line and along each lateral wall.

When the first tonsil has been removed a twelve-inch length of one-inch ribbon gauze is soaked in the cocaine and adrenaline mixture, wrung out and packed into the post-nasal space. After the tonsil removal has been completed, this pack is removed and the adenoids are curetted out.

Comment.

I do not propose to discuss the relative merits of local and general anæsthesia for tonsillectomy. I shall say only this: ten years ago I had removed only a few tonsils under local anæsthesia, but now I try to persuade all adult patients to submit to this procedure. During more than five years in the army I performed nearly six hundred tonsillectomies, and in only eight of these was a general anæsthetic required.

◆

Reviews.

A YEAR BOOK ON GENERAL SURGERY.

Like its predecessors in recent years, "The 1945 Year Book of General Surgery" has been edited by Evarts A. Graham.[1] The book is arranged in many sections. The first deals with anæsthesia and analgesia, and then follow sections on asepsis and antisepsis, operative technique, military surgery, wound healing and pathological conditions, tumours, blood vessels, bones and fractures. From this point onwards the sections deal with regions or organs. There is one exception—a section on hernia is introduced after the section on the large bowel. This may not be quite logical, but from the practical point of view it makes the subject easier to handle.

Under the first heading of anæsthesia and analgesia appears a reference to what must be regarded as a preliminary report on the intravenous use of "Novocain" as a substitute for morphine in post-operative care. Curare, which is being used in order to secure muscular relaxation in anæsthesia, is discussed—two papers on the subject are abstracted. In the section on asepsis and antisepsis an important reference is that to a study by F. L. Meleney on the use of sulphonamides in the prevention of wound sepsis. The review by H. R. G. Poate on the acridines is also mentioned. The work of Large and Heinbecker and of Bruneau and Heinbecker on the effects of cooling on wound healing and experimentally infected wounds is regarded by the editor as important; it is mentioned in connexion with wound healing and in the section devoted to the upper extremity. Under wound healing, too, skin grafting by various methods is discussed at some length. The use of penicillin in the treatment of open fractures of the femur is described; the penicillin did not control sepsis fully, and the conclusion is that its use is not a substitute for surgery. This is one report. According to another, early wound suture and the use of penicillin in 62 fractures (site not specified) were immediately successful in 58 cases. Penicillin is mentioned in connexion with injuries to the brain and meninges. In the section on the thyreoid the repeated reference to thiouracil shows how this drug has become part of the surgeon's armamentarium. In the section on the breast there are three reports dealing with the effects of surgical and X-ray castration on mammary cancer. Results are reported for both women and men; they were temporary, but much more striking among men than among women. In the section on the surgery of tuberculosis the results reported in this journal by C. G. Bayliss on closed intrapleural pneumonolysis are given; results by F. D. Stubbs, of Philadelphia, are also included. Turning to the abdomen, we find reference to peritoneoscopy as a useful procedure in certain doubtful cases. Wangensteen's views on the clinical aspects of the peptic ulcer problem are given due consideration. The references to peptic ulcer are many and cover most aspects of the subject, at any rate from the surgical point of view. E. F. Berman has devised a "simplified method of defunctionalizing the colon" according to the precepts of Devine. He uses only a colostomy in any portion of the colon proximal to the lesion and a special double lumen tube with a balloon attached—one portion of the bowel is functionally divorced from the other by these means. In the section on the pancreas two cases of rupture of the pancreas are reported; rupture was caused by violence and no other viscera were injured. The section on the spleen contains several reports on rupture of that organ. Among the cases mentioned are several in which rupture was delayed; in one instance rupture occurred four months after injury was sustained. The confusion that may exist between root neuritis and appendicitis is described in the section on the spine and spinal cord.

---

[1] "The 1945 Year Book of General Surgery", edited by Evarts A. Graham, A.B., M.D.; 1946. Chicago: The Year Book Publishers Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary Limited. 7" × 4⅜", pp. 736, with illustrations. Price: 24s.

It would be possible to refer to many more subjects of interest in this year's year book on surgery. Those that have been named will show that this year's volume is worth a place on the shelves of every practitioner concerned with surgical work.

PROGRESS IN PÆDIATRICS.

The important work carried out in the field of pædiatrics during 1945 is reviewed in "The 1945 Year Book of Pediatrics",[1] edited by Isaac A. Abt, with the collaboration of Arthur F. Abt. The references to writings of different authors are grouped under sectional headings; some of the headings refer to systems or regions of the body, others refer to certain diseases or groups of diseases, and others again to such general subjects as nutrition, surgery, therapeutics and toxicology. There is a good subject index which makes reference to a particular subject a simple matter. The book may thus be used as a work of reference or as one in which the reader may browse to his heart's content.

This book containing such a wealth of material, it is impossible to give an adequate idea of its contents and difficult to select subjects to which attention should be drawn. There are many references to meningitis in its different forms; among the work included is that on influenzal meningitis by Elizabeth K. Turner, of the Children's Hospital, Melbourne. There are some important references to mumps—its association with chicken-pox, and reports on work in immunity in connexion with it. Further reports on the occurrence of abnormalities in infants following maternal rubella are recorded. In the section on rheumatism discussions on the use of penicillin appear and reference is also made to the prevention of recurrences by use of sulphonamide drugs. There are several references to *erythroblastosis fœtalis*. The section on tuberculosis includes an account of the pathological anatomy of the primary complex and also of chronic disseminated tuberculosis. Diarrhœal diseases have been discussed by several authors; the dysentery bacillus was responsible in some instances, in others, such as the epidemic diarrhœa reported by Kate I. Campbell, the causative organism was not isolated. Nephrectomy has been undertaken in the treatment of a two and a half year old child on account of hypertension, and after three years the child is apparently cured; a kidney was also removed for the same reason from a child aged seven years, and after five years the blood pressure remains normal and the cure is thought to be permanent. In the section on therapeutics and toxicology there are many references to sulphonamide therapy and to the use of penicillin.

This book should engage the attention of every pædiatrician and indeed of every general practitioner.

PROGRESS IN OBSTETRICS AND GYNÆCOLOGY.

All practitioners interested in obstetrics and gynæcology will welcome the appearance of "The 1945 Year Book of Obstetrics and Gynecology", which is one of the books of the Practical Medicine Series.[2] The editor is J. P. Greenhill. In this book will be found a short summary of work done during the year in both subjects. These subjects are suitably grouped together. In the opening pages of the part of the volume devoted to gynæcology (the second part of the book) will be found reference to an article by J. Pon Orfila, who holds that obstetrics and gynæcology should be unified into one specialty and designated gynæcology. The editor in a note (it is longer than the abstract of the paper by Orfila) states that Orfila suggested that the year book should be known as the "Year Book of Gynecology" and be divided into three sections devoted to "general gynecology", "extragravid gynecology", and "obstetric gynecology". The editor discusses the subject at some length and comes to the conclusion that everyone who contemplates practising obstetrics or gynæcology, as those terms are now used, should without fail be trained in both specialties. With this contention most people who have thought about the subject will agree.

Another paper to which attention should be drawn is that of W. R. Cooke, who deals with the differential psychology of the American woman. The psychology of the American woman is not very different, if at all, from that of woman in any English-speaking country. There is no doubt that many symptoms peculiar to women are purely of mental origin. Psychotherapy is needed if relief from symptoms is to be obtained. Without going further into Cooke's argument we may agree that to be successful in affording relief to his patients an obstetrician or a gynæcologist must be a good psychologist.

With these introductory remarks we may describe shortly the general structure of this year book. The part dealing with obstetrics is divided into four main sections. The section on pregnancy is divided into four subsections on physiology, abortion, complications and toxæmia. The second section on labour deals in turn with general considerations, analgesia and anæsthesia, complications, operative obstetrics and uterine hæmorrhage. The third section on the puerperium deals with general considerations and infection; the fourth section is devoted to consideration of the newborn.

The part of the book covering gynæcology has sections on general principles, diagnosis, infertility, ectopic pregnancy, operative technique, benign tumours, malignant tumours, special tumours of the ovary, menstruation and its disorders, endocrinology and infections.

These subjects are, as in all books of this series, covered by abstracts from articles that have appeared in medical journals in different countries. To many of the abstracts the editor has added an editorial note; in this regard he has been most liberal. In our opinion this adds considerably to the value of the book which may be recommended to readers with the greatest confidence.

NUTRITION AND CHEMICAL GROWTH IN CHILDHOOD.

Volume I of "Nutrition and Chemical Growth in Childhood", which appeared about four years ago, presented the "evaluation" of a mass of data which related to the growth and development of some twenty normal children. Volume II was to have been the interpretation of this material. However, the workers came to the conclusion that because future advances might enable other interpretations than theirs to be placed upon the data, it was desirable to present in full the results of all experiments and all observations made upon their subjects. The present volume contains this material.[1]

The observations on some children lasted from shortly after birth to the age of fourteen or fifteen years. In other cases the period was shorter and covered various intervals between these limits. Each child was studied at regular intervals, in some instances weekly, and the material in the present volume includes height, weight and other anthropometric data, blood counts, plasma nitrogen and mineral content, basal metabolism measurements, records of size of the bones of the wrists *et cetera*, and constituents of the urine including nitrogen partition. A large number of radiographs of wrist, jaw, teeth, pelvis, knee and foot, and of the progress of barium meals through the gastrointestinal tract have been included. In addition, the full protocols of each balanced experiment for each child have been reported.

It is understood that the book cost more than the published price to produce, and that the difference was met from special funds at the disposal of the author.

This book undoubtedly has a place in a large reference library or perhaps on the shelf of a pædiatrician; but it is not recommended as a useful addition to the library of the general practitioner.

---

[1] "The 1945 Year Book of Pediatrics", edited by Isaac A. Abt, D.Sc., M.D., with the collaboration of Arthur F. Abt, B.S., M.D., Comdr., M.S., U.S.N.R.; 1946. Chicago: The Year Book Publishers, Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7" × 4¾", pp. 448, with many illustrations. Price: 24s.

[2] "The 1945 Year Book of Obstetrics and Gynecology", edited by J. P. Greenhill, B.S., M.D., F.A.C.S.; 1946. Chicago: The Year Book Publishers Incorporated. 7" × 4¾", pp. 576, with illustrations. Price: 24s.

[1] "Nutrition and Chemical Growth in Childhood", by Icie G. Macy, Ph.D., Sc.D., with a foreword by Lawrence Reynolds, M.D., and a supplement by Julia Outhouse Holmes, Pr.D.; Volume II, original data; 1946. Springfield: Charles C. Thomas. 9" × 6", pp. 1048, with many illustrations. Price: $10.00.

The Medical Journal of Australia

SATURDAY, JUNE 22, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

CEREBRAL TRAUMA AND ITS MECHANISMS.

THE clinician meets few, if any, more difficult problems than that connected with cerebral involvement in head injury. War surgery has given surgeons wide experience of penetrating wounds of the skull. As a result, not only has the application of modern methods of treatment saved many lives that would previously have been lost, but the relationship between trauma and symptoms has become less obscure. In cerebral injury from blunt mechanical trauma the greatest difficulty arises. The trouble is that the skull is not a regularly shaped, homogeneous body and the effect of a force acting upon it depends on many factors. The effects may be immediate or remote, and the immediate effects may be of such a kind that they are recognizable on macroscopic examination of the brain; on the other hand, they may not be obvious. In these circumstances they may sometimes be detected on microscopic examination, and, again, cases occur in which no cause of death can be discovered. The literature on the subject, which is extensive, has been reviewed recently by C. D. Tedeschi,[1] who holds that a physical visualization of the ways by which injuring forces are transmitted to the brain is essential if the problem of cerebral trauma is to be approached correctly.

The patterns of fracture of the skull, although subject to some extent to the laws of mechanics, are varied and unpredictable because the skull is composed of panels of bone, offering variations both in thickness and in elasticity from race to race, from individual to individual, and in the same individual in the different portions of the skull. This statement is equally true of cerebral injuries caused by physical violence, and in this regard it has to be remembered that the brain is composed of tissues that differ in specific gravity, toughness and tensile strength. In relation to the mechanism of movement, brain injuries have been said to occur either by distortion of the skull (the "compression concussion" of Brown and Russell), or by movements of the brain within the skull as the head is thrown through space and then brought to a sudden rest (the "acceleration concussion" of the same authors). In compression concussion the skull is likely to undergo momentary local deformation at the site of application of the force and also general distortion. The new curvatures of the distorted skull will impinge on the underlying brain matter, giving rise to increased pressure in some areas and to diminished pressure in others. The architecture of the skull has a great deal to do with the extent of the injury. The rebounding of the skull is also important. As it occurs the meningeal vessels may be pulled away from the brain and broken and the superficial brain structures may sustain further damage. When the forces of acceleration are operating damage may be more severe. Not only is the brain damaged at the area where the force is applied, but the brain is made to slide within its dural covering and single anatomical units and perhaps the individual cerebral cells are likely to be distorted and the connecting pathways to be bent, stretched or torn. Blood vessels may be torn or cranial nerves evulsed. Brown and Russell have shown that if the head is prevented from moving at the moment of the blow, no concussion occurs; if even slight movements are allowed concussion takes place. Holbourn has explained this by showing that to produce shear strains of the skull a rotary acceleration is necessary. Localized damage in cranio-cerebral injury is attributed to skull distortion and distant damage to rotation of cerebral tissue around regions where the brain is fixed locally in relation to the skull. As a result of this rotation constituent particles of the brain are pulled apart; if normal relations are not restored when the blow is over, nervous symptoms become manifest. Thus, concussion is thought to be due to a minimal degree of separation of constituent particles and contusion to a maximal separation. Most practitioners would possibly overlook the fact that the smaller the area over which the energy of the impact is discharged, in a fixed unit of time, the greater will be its intensity. If the area of impact is reduced, a point is reached at which the injuring body penetrates the skull. This happens with a gunshot wound. The penetration lessens the degree of acceleration to which the skull is subjected. This explains why, although penetrating wounds often cause severe local damage to the brain, they often fail to cause concussion.

Tedeschi deals in an interesting way with the question of contralateral injury, or injury by *contre-coup*, as it is often called. Use of this term generally means that a pole of the brain opposite the site of impact has received some damage. Some interesting suggestions have been made of the way in which this damage is caused. One suggestion is that the energy of impact is propagated by irradiating waves of motion through meridional lines which diverge as they leave the site of impact and converge as they approach the opposite pole. At the point of collision of the converging waves a contralateral injury is likely to occur. This view is put forward by Moritz. Another possibility is that there are two impacts, the first at the site of the blow and the second where the advancing surfaces of the brain are brought to a sudden rest by the forces which resist its forward motion. A third possible cause is the shortening of the axis of the brain along the direction of the travelling force. Tedeschi remarks that this last-mentioned mechanism can apply to impacts on the sides of the head because of the relatively high degree of elasticity of the horizontal arch of the skull. It does not appear, however, to apply to occipital or frontal impacts. The construction of the longitudinal arch of the skull and the rigidity of the bones at the base are sufficient explanation of this. Ritchie Russell holds that traction rather than contusion is the actual cause of contralateral injury, as the brain is torn from its coverings by the force of its own momentum and the pia-arachnoid membranes and blood vessels are stretched and torn. Tedeschi agrees that this hypothesis explains contralateral subarachnoid bleeding, but holds that it does not account for the extensive laceration of cortex and membranes that is so often seen. He concludes that contralateral injuries may result from different mechanisms which, according to the modality of the accident, may operate singly or in combination. It is therefore, he thinks, correct to use the term contralateral injury in a limited sense to indicate only that an area of the brain opposite the site of impact has been injured.

---

[1] *Medicine*, December, 1945.

This short account gives an outline of Tedeschi's review of the mechanisms of cerebral trauma. It by no means covers the whole of his review which deals in full with the subject of cerebral injury "by blunt mechanical trauma". A discussion on these mechanisms is far from being purely academic. If a clinician has an understanding of the process which has probably taken place in the cranium of his patient, he is at least starting off on the right foot in the investigation of his condition. Tedeschi remarks that the effects of a trauma "will vary according to the area of application of the striking force, the degree of plasticity, elasticity, and tensile strength of the part struck, the shape, speed and weight of the injuring agent, and the degree of relaxation of the offended part at the moment of the impact". The clinician may not be able to determine these factors, but he can try. In making this attempt he will be bound to think of the immediate morphological effects of trauma and the microscopic changes that may take place, subjects that are covered in Tedeschi's review; he will also not fail to remember the most important group of cerebral traumata not associated with recognizable organic changes, also described by Tedeschi. Needness to say, the most careful record of all signs and symptoms should be kept in every case of head injury. It is held that the care of patients with fractures of the limbs should be in the hands of a trained expert in the subject. With equal justification it can be held that the progress of every patient with a cerebral injury should be observed by a trained neurologist. If the patient dies, a post-mortem examination, including the preparation and microscopic examination of sections, should be undertaken. In no other way can knowledge of this subject grow.

Current Comment.

DIAGNOSTIC METHODS IN CARDIAC DISEASE.

A great deal is now heard about mechanization in all fields of human interest. A good debate can always be started between the present and past generations of doctors on the merits and demerits of special investigation in medicine, for it is often hard to see where the distinction is to be drawn between the research value and the clinical value of laboratory procedures. Since the introduction of the electrocardiograph into clinical medicine and the consequent simplification of the instrument it is natural that its use is becoming almost a routine procedure. Therefore it is of interest to read a brief address by Fredrick A. Willius, of the Mayo Clinic, delivered to the Section of Medicine at the meeting of the Canadian Medical Association last year.[1] With commendable restraint Willius wonders whether mechanical methods of detection are receiving over-emphasis at the expense of other well-tested methods. Everyone will agree that his contention that a careful clinical history must be taken in every case and followed by a thorough and complete physical examination is an axiom. All other methods are adjuncts and the question of their employment in any given case is a matter for individual decision. In some cases the need for such adjuncts is small, as in rheumatic carditis. In others the evidence is not so convincing by itself. Willius remarks that in the anginal syndrome of coronary sclerosis the clinical history is frequently all that can be relied upon for a diagnosis, as the heart may not show any abnormality on ordinary examination or on fluoroscopy, while the electrocardiogram shows no significant alterations in about a third of the cases. The tracings suggestive of or characteristic of coronary occlusion or of ventricular strain are of course most important when found. In chronic constrictive pericarditis Willius gives an example of the need for integration of all the evidence, for here, although the onset is suggestive, clinical and even radiological examination of the heart itself may not supply the clue unless calcification is demonstrated and there is no pathognomonic electrocardiographic pattern. In this case careful study of the secondary phenomena is of prime importance. These examples are cited by the author in order to reinforce his expressed view that the advent of what he calls a new order of being, the electrocardiographer, has brought a false set of values into cardiac diagnosis in some quarters. The danger lies with the practice of making a clinical diagnosis on the basis of the electrocardiogram, an act of faith in which Willius aptly remarks that the electrocardiographer exerts his talents far beyond the boundaries of the science. It is contended that the physician who refers the patient expects a clinical diagnosis, but Willius points out that there are two alternatives to the interpreter of the record: either he must ensure that his colleagues who seek his opinion understand clearly the limitations of the method or he must permit them to draw their own conclusions. The attitude that is adopted in most large medical centres in this country is surely that the mechanical aberrations shown on the tracing are noted and measured, and an indication is given of the general conformity of the pathological pattern to certain clinical conditions. It is felt by most physicians that where an electrocardiogram is taken as part of an attempt to assess the condition of the heart, either the medical practitioner responsible for advising the patient should be able to sum up the total information gained or else the opinion should be sought of someone who is able to do so. When the electrocardiogram shows no abnormality this is of particular importance. But it must be admitted that the machine is still made the supreme arbitrator in too many cases, and senior medical men who have had recent service experience will agree that it is not only in civilian practice that this occurs. Indeed we understand that instructions were given at one time that a clinical opinion in cardiac cases was only to be appended to the general history and not recorded on the electrocardiogram, so as to avoid the bias that might arise in subsequent dealings with the patient in his later medical adventures.

Willius is careful to point out the great advances that have been made in the localization of cardiac infarcts and the occasional recognition of a picture suggestive of pulmonary infarction, but he also reminds us that the authorities who have described these electrocardiographic signs have clearly stated that the characteristic tracings may not appear or may be modified or delayed. It is also important to remember that there may be more than one pathological process at work, a composite picture thus being

---

[1] *The Canadian Medical Association Journal,* March, 1946.

ANDREW'S PHARMACEUTICAL PREPARATIONS

THIOURACIL

for therapy and in the pre-operative management of thyrotoxicosis, for patients with exophthalmic or adenomatous goitres, primary and secondary hyperthyroidism.

Packed in bottles of 50 and 100 tablets of 0.05 grm.
Packed in bottles of 50 tablets of 0.2 grm.
Dosage in pre-operative management:
From 0.2 to 0.6 grm. a day.
Maintenance dosage .... From 0.05 to 0.2 grm. a day.

THIOUREA in bottles of 100 tablets of 0.25 grm.

Literature and further information provided on request from the manufacturers:

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS

FOR CONVALESCENTS • NURSING MOTHERS • POST-OPERATIVE CASES

and for members of the professional staffs working under strenuous conditions

THIS VITAMINISED TONIC FOOD HAS DEMONSTRATED OUTSTANDING ADVANTAGES AND BENEFITS

MILO is an appetising, chocolate-flavoured blend of pure country milk and malted cereals, fortified with essential vitamins, and containing organic phosphates, calcium and important mineral salts. It is served as a beverage and is equally delicious and beneficial whether taken hot or cold. MILO can be recommended with the utmost confidence for assisting recuperation, for restoring energy and as a helpful factor in the inducement of restful sleep. It is highly palatable and is easily assimilated.

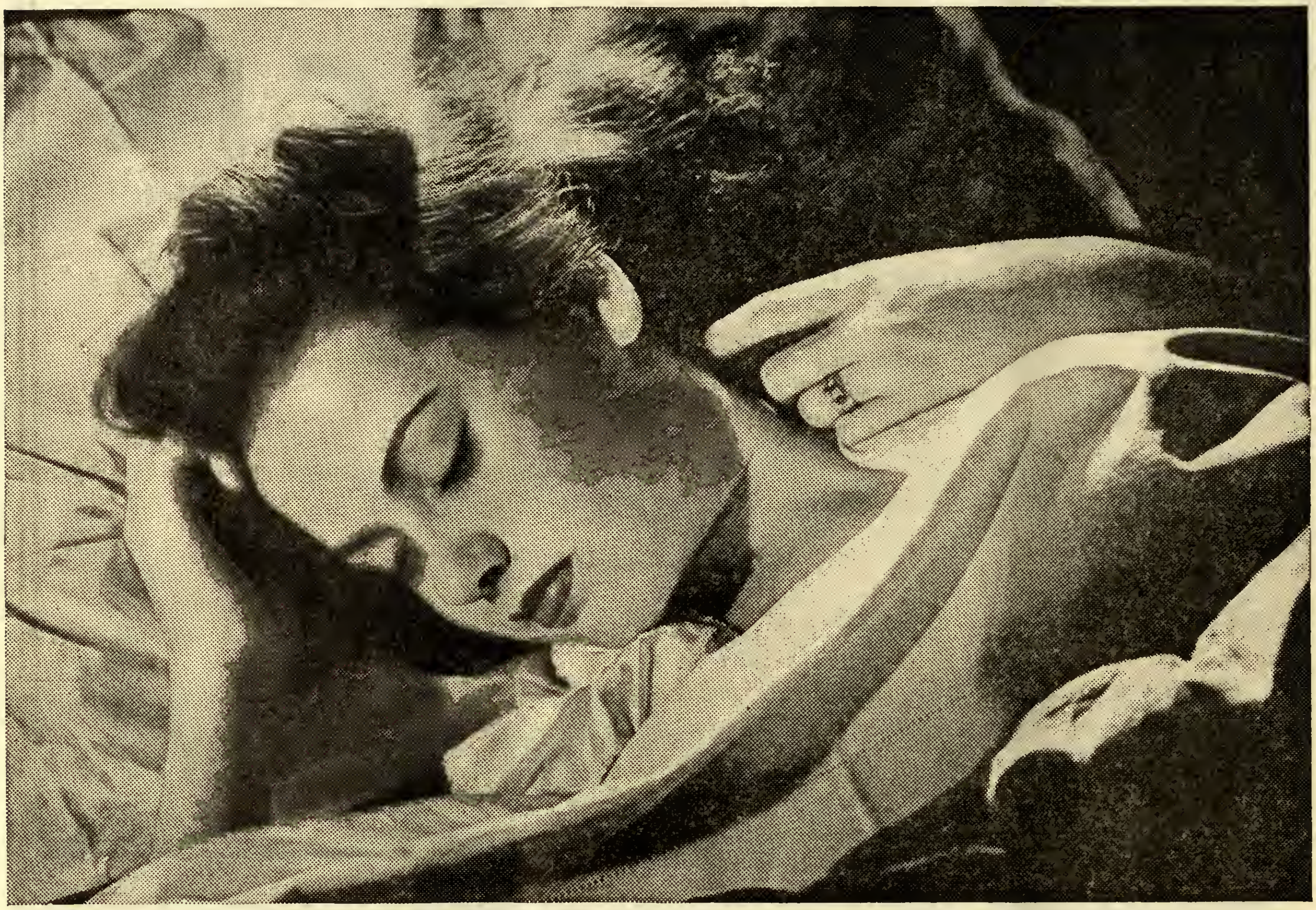
MILO
NESTLE'S TONIC FOOD
INDUCES PEACEFUL SLEEP
MILO
NESTLE'S
FORTIFIED
TONIC FOOD
A DRIED MILK FOOD PRODUCT
STRENGTH
½ LB.
NET
PREPARED IN AUSTRALIA

MILO

The Fortified **TONIC FOOD**

A NESTLÉ'S PRODUC

COPYRIGHT R1233



Unobstructed Breathing . . . Undisturbed Sleep

For patients suffering from common colds, sinusitis and nasal manifestations of allergy, decongestion is promptly achieved by topical application of Neo-Synephrine Hydrochloride without causing wakefulness.

Neo-Synephrine solutions are well tolerated locally, being isotonic and virtually non-irritating to nasal mucosa. Ciliary action is not impeded and the relative freedom from systemic reactions widens the range of usefulness of Neo-Synephrine.

Available in ¼% or 1% solution in 1 oz. bottles for dropper or spray; as a ¼% emulsion miscible with watery nasal secretions; and as a ½% jelly in a collapsible tube with applicator.

Further information and samples will be gladly forwarded to medical practitioners upon request.

NEO-SYNEPHRINE
HYDROCHLORIDE

Frederick Stearns & Company Division
SYDNEY, AUSTRALIA
DETROIT, NEW YORK, KANSAS CITY, SAN FRANCISCO, U.S.A. : WINDSOR, ONTARIO : AUCKLAND, N.Z.

produced in the electrocardiogram. Willius ends by stating that until the fallacious practices he has condemned are stopped, the future of electrocardiography is uncertain. Of course, it is not the fault of the medical profession alone if the public have a wrong perspective in this matter of special methods which should be ancillary to clinical medicine, but the solution is to some extent in our own hands.

THE PLACEBO.

The ideal in therapeutics is the employment of a specific remedy for a specific disease, whether such remedy is medicinal, surgical, physical or psychological. Unfortunately there are not enough specifics known as yet, and the therapist must perforce fall back on the help he can give the patient in the circumventing of fate by acquiescence. In this great and true function of the practising doctor the *placebo* has had, and probably still has, a place. It is really surprising to find, on the authority of O. H. Perry Pepper, professor of medicine in the University of Pennsylvania, that the comprehensive subject of the *placebo* is not to be found in the subject indexes of the world literature of medicine.[1] No doubt it has been referred to many times, but no one has ever written about it. What a pity! What a subject for a symposium! Pepper, regretfully noting that even La Wall's survey of two thousand years of pharmacy does not even mention the *placebo*, proceeds to expound the meaning and history of the term. Perhaps in advance it may not be superfluous in these days, barren of Latinity, to point out that *placebo* means "I shall please". The medical profession has inherited the term only fourth hand. The original meaning was words used in vespers in the office for the dead in the Latin service, derived from the 106th Psalm, "*Placebo Domino in regione vivorum*". In the familiar English versions this reads: "I will walk before the Lord in the land of the living." Our author tells that this derives directly from the Hebrew, in which the word *halak* means to walk habitually, and hence to please. Wyclif uses the word *placebo* for the burial service. Very different are the next meanings, as used by Chaucer: as part of a phrase signifying to play the sychophant, and as a name for a flatterer. But let us pass by these rather suggestively sinister meanings and come to the medical use of the word. Pepper is surprised that only as late as 1787 does it emerge in a lexicon, being defined as "a commonplace method of medicine", which, as he dryly remarks, is in one sense only too true. In Hooper's "Medical Dictionary" it appears in its correct medical guise for the first time as "an epithet given to any medicine adopted more to please than to benefit the patient". Incidentally, the word "epithet" is good. The author explains this curious delay in the medical adoption of the word, at least in public, by suggesting that the older physicians' tenacity of faith in their medicines was so great that they would not admit that any were really inactive. We might even suggest ourselves that were a census taken on the value of a number of drugs among doctors, the answers might be strangely varied. Pepper has consulted a number of works on therapeutics and finds that modern authors are more than reticent; as he observes, "they turn up their scientific noses at this humble humbug", apparently regarding the giving of a *placebo* as not mentionable in polite society—one of those things which we all do, but do not talk about. But perhaps this arcane mystery is too much derided. It is not easy to select an appropriate *placebo*. It should be quite inactive for the sake of the patient's safety, and not after the fashion of our more powerful and effective new remedies, sometimes to be feared for the doubtful gifts of other and more dangerous affections that may follow in their train. Further, it must be to some degree impressive. Perry mentions such powerful names as condurango and cimicifuga; but even here we must be careful, for who knows when some clever inquisitive analyst, perhaps wishing to do some original work for a higher degree, may not discover in even the purest herbs of the advertisers some substance with an impressive structural formula and a proven pharmacological action on hamsters or salamanders? Is the *placebo* necessary? Pepper thinks probably not, provided the patient and his family are sufficiently intelligent; but, as he sadly remarks, few are. Today, with the threat of free medicine over the public's head, there is a new danger: that the incredibly vast consumption of drugs by the people in general will not only be increased, but will include more potent substances than those harmless ones which we have been considering as possibly justifiable in the treatment of those who insist on medicine at any cost. As a profession we should attempt to educate the public, although the way seems hard, long and barren for the educators, who even now cannot really cope with the seductive beckoners along the road. In the dawn of medical history the suppliants at the temples of healing humbled themselves before the gods. They were in the main treated by the primitive dietitians and physiotherapists of the day, and no doubt, in addition to the powerful psychic suggestion which helped to heal them, some simple *placebo* also lent its aid. As human nature has not changed, so far as we can tell, it is probable that even in the mechanical age the same basic factors in healing are necessary, not excluding the harmless *placebo*.

THE PREVENTION OF LEAKAGE AFTER INTESTINAL ANASTOMOSIS.

Every surgeon knows, sometimes from sad personal experience, that anastomosis of the colon is always attended by the risk of sepsis following leakage of bowel contents. In order to lessen this risk many procedures have been devised. What promises to be an important advance in this branch of surgery has been recorded in a preliminary report of an experimental study by John Devine.[1] He points out that suturing of the large bowel can be compared with the suturing of the inner tube of a motor car tire. Sutures cannot be used to repair tears in rubber because each stitch would allow the leakage of air to occur; these tears are therefore repaired by the vulcanizing on of patches. The method devised by him consists in the "vulcanizing on" of peritoneal grafts or of split skin grafts over the suture line, whether the surface of the bowel was covered by peritoneum or not. Devine refers to work by Sano, who reported in 1943 a method of "sticking on" skin grafts with dried plasma and leucocyte cream. Young and Favata in 1944 simplified the procedure by using thrombin solution on the unwashed skin graft and normal pooled plasma on the recipient area. Devine's study was undertaken to see whether skin or peritoneum could be grafted over the suture line of colon anastomoses; he recognized that any method which would be successful with the colon would be at least equally successful with the small bowel and stomach. Dogs were used for the experiments. In the first six experiments grafts were applied to the line of the anastomosis without pressure in five instances and with pressure in one. In the case in which pressure was used the animal was killed at the end of a week and the graft was found sticking firmly in position without any sign of leakage or peritonitis. In the five cases in which no pressure was used (the grafts were of skin, peritoneum or omentum), all were firmly stuck, but leakage had occurred at one spot or another. In the case of one animal no graft at all was used and death occurred from fæcal contamination in twenty-four hours. In the second series of four experiments pressure was applied to the grafts; no sutures were used. Two grafts were entirely successful. In one case an extensive hæmorrhage occurred and caused death. In the fourth case a hole was cut in the graft by accident and peritonitis occurred from leakage through this hole. The grafts were stuck on with thrombin and plasma solution. Peritoneal and skin grafts were also applied to an exteriorized human bowel with satisfactory results. A further report on this subject from this investigator will be awaited with interest.

---

[1] *Transactions and Studies of the College of Physicians of Philadelphia*, June, 1945.

[1] *Surgery, Gynecology and Obstetrics*, April, 1946.

Abstracts from Medical Literature.

PATHOLOGY.

Internal Lesions in Burns.

Roger Denio Baker (*The American Journal of Pathology*, July, 1945) has analysed a series of 96 autopsies in which cutaneous burns or the complications of cutaneous burns were the chief cause of death. The series included 37 cases in which death occurred during the first day, 26 cases with death from the second to sixth day inclusive, and 33 cases with death after the first week. Hepatic necrosis was usually absent, and when present could be explained more reasonably as a result of a complication of the burn, such as infection, than as a direct result of the burn. Necrosis of minimal degree was noted in four cases in which no factor but the burn was demonstrated as a cause. In this series of cases tannic acid treatment had not been used to any appreciable extent. In 28 cases from the period before the use of tannic acid there was no case of hepatic damage due to the direct effect of the burns. It was concluded that the necrosis of the liver is not a lesion characteristic of burns. Karyorrhexis of high degree occurred frequently in the lymph nodules of the spleen in those patients less than seventeen years of age who died during the first three days following burning. Karyorrhexis was absent, or present in minimal degree, in the splenic nodules of those older than seventeen years. Moreover, when those less than seventeen years of age survived more than three days, karyorrhexis was absent or present in minimal degree. While it could not be proved that the striking karyorrhexis present in the young who died during the first three days was not present before burning, it was thought that the karyorrhexis was probably the result of the burn and that it disappeared after the third day because the digestion of the nuclear particles by phagocytic cells rendered them non-stainable with hæmatoxylin. It was concluded that changes in the splenic nodules were not fully characteristic lesions of fatal burns, since these changes were not present in adults. Unequivocal changes in the adrenal and kidney were infrequent. The swelling, congestion and occasional hæmorrhage in the adrenals in early deaths were attributed to shock. Hæmoglobin casts were noted in the kidneys rarely. In general, emphasis is placed upon the paucity of histopathological alterations specific for burns and not attributable to shock, to the rarely occurring hæmoglobinæmia, or to secondary infection.

Primary Intracranial Chorionepithelioma with Metastases to the Lungs.

R. E. Stowell, E. Sachs and W. O. Russell (*The American Journal of Pathology*, July, 1945) present the case of a fifteen-year-old boy with a primary chorionepithelioma in the region of the diencephalon with metastases to the lungs. The histological structure of the tumour was typical of chorionepithelioma. Quantitative analyses of hormones showed significant amounts of gonadotropins and œstrogens in the urine, cerebro-spinal fluid and metastatic neoplastic tissue. It is believed that the chorionepithelioma arose in the region of the pineal body from a previously existing teratoma. The testes and other organs were eliminated as sites for a possible primary growth of the tumour by thorough sectioning.

The Vaginal Smear in Diagnosis of Carcinoma of the Uterus.

According to Olive Gates and Sheilds Warren (*The American Journal of Pathology*, July, 1945), a total of 341 vaginal smears from 233 women were studied to determine the place of this method in routine diagnosis of the presence or absence of uterine carcinoma. A mistaken positive diagnosis made from a smear should be a problem only in exceptional cases of radiation reaction or of senile atrophy with infection. False negative diagnoses are more difficult to avoid. There are certain types of carcinoma cells which are difficult to recognize without a good deal of experience. Interpretation of smears made after radiation treatment demands more experience than interpretation of other smears because of the changes in epithelium induced by radiation. The smear may be valuable in diagnosis to detect recurrence after radiation, since in these cases biopsy is preferably avoided. As a subsidiary test, the vaginal smear may be especially useful in cases of "hidden carcinoma". This method as a means of final diagnosis has yet to be clearly established. Before this is possible, there must be more specific information upon the limitations and advantages of the method based on larger series of cases. It is the authors' impression that this procedure is promising in a high degree. As a screening test for detecting the existence of cervical or endometrial cancer in large groups of women it may well be of value.

Adenoma of the Bronchus.

According to Herman J. Moersch, William S. Tinney and John R. McDonald (*Surgery, Gynecology and Obstetrics*, November, 1945), adenoma of the bronchus is a relatively common tumour involving the tracheo-bronchial tree. It occurs usually among younger persons than does carcinoma of the bronchus, and, in contrast to bronchiogenic carcinoma, is more common among women than among men. It is generally slow growing and usually gives rise to clinical symptoms over a much longer period than carcinoma of the bronchus before the diagnosis is established. In the authors' experience cough is the most frequent and earliest symptom of adenoma of the bronchus. Hæmoptysis, asthmatoid wheeze and recurrent bouts of pulmonary infection are other common symptoms. Adenoma of the bronchus generally presents a characteristic bronchoscopic picture, but the final diagnosis must rest on microscopic examination. Adenoma of the bronchus presents a characteristic microscopic picture. Mitotic figures are usually absent. The type of cell is consistently a fairly small, roundish cell which does not have marked hyperchromatism of the nucleus. The tumour cells consistently make an attempt to form acini, but are rarely very successful in the attempt. A noticeable feature of all adenomata of the bronchus has been their vascularity. In no instance in the authors' series did metastasis occur to the other lung or outside the thoracic cavity. From this study the authors feel that adenoma of the bronchus should be regarded as a neoplasm of the lung *sui generis*. The method of treatment to be employed in cases of adenoma of the bronchus depends on the situation of the tumour, the degree of secondary pulmonary suppuration and the patient's general condition. In their experience endoscopic destruction of the tumour and destruction by surgical extirpation of the tumour by means of lobectomy or pneumonectomy are the most satisfactory methods of treatment.

Solitary Giant Follicular Lymphoma of the Vermiform Appendix.

Three cases have been described by Robert P. Morehead and W. E. Woodruff (*Archives of Pathology*, July, 1945) in which the appendix was removed following the development of symptoms simulating those of acute appendicitis and in which the appendix showed a localized tumour which was composed of lymphoid tissue. This tumour tissue was characterized by numerical and dimensional hyperplasia of the lymphatic nodules, disruption of follicular outlines and invasion of all coats by large hypochromatic cells, smaller and more chromatic cells and medium-sized lymphocytes. On morphological grounds the tumours observed may be interpreted as examples of giant follicular lymphoma of the appendix with direct transformation into "polymorphous cell sarcoma". At the time of operation each appeared to be a solitary tumour, since the appendix was the only structure found to be involved. In the absence of post-mortem studies, however, opinion must be withheld regarding the solitary nature of these lesions.

Theca-Cell Tumours of the Ovary.

E. A. Banner and B. Dockerty (*Surgery, Gynecology and Obstetrics*, September, 1945) present data on 23 cases of theca-cell tumour with a correlation of clinical, pathological and chemical data. These tumours appear to be derived from the ovarian mesenchyma and are closely related to the granulosa-cell group of tumours. Occasionally the relation may be a histological one with elements of both types discernible within the same neoplasm. Usually, however, both tumours present "purity" of type. The relatively high incidence, especially in post-menopausal patients, of associated myometrial hypertrophy and uterine fibromyomata, combined frequently with endometrial hyperplasia and cervical and fundal carcinoma, suggests the production by the ovarian tumours of œstrogenic hormone. Inability to demonstrate measurable quantities of this hormone through assays of tumour tissue is perhaps not to be regarded as conclusive evidence of absence of the hormone. A chemical analysis of eight theca-cell tumours gave evidence that these tumours contained increased amounts of cholesterol and cholesterol ester fractions as compared with the values for these substances found present in seven normal ovaries. Although the tumours did not invariably produce clear-cut clinical symptoms, their presence could often be suspected by an alteration in the menstrual habits of the patient. Postmenopausal bleeding from a hypertrophic endometrium was commonly encountered in these patients. Histologically, in spite of the employment of "new stains", the authors found difficulty in distinguishing certain fatty fibromata from theca-cell tumour. In such doubtful cases examination of the endometrium was often of value.

MORPHOLOGY.

Perception and the Corpus Callosum.

C. S. BRIDGMAN AND K. U. SMITH (*Journal of Comparative Neurology*, August, 1945) investigated a group of patients with surgical section of the *corpus callosum* in order to find the extent to which connexions between the cerebral cortices participate in visual discriminations apparently dependent on integration of function between the two sides of the brain. A general analysis of visual perception in cases of partial and complete sections of the *corpus callosum* disclosed that the following perceptual functions, depending on some degree of bilateral central interaction, were not materially altered by the operations: (*a*) binocular depth perception which involved in part fusion and integration of activity set up by stimulation of the heteronymous hemiretinæ; (*b*) ability to maintain and recover fusion in response to diplopia-producing stimuli; and (*c*) monocular apparent—movement vision involving stimulation of points lying on opposite sides of the vertical mid-line of the eye. However, the data indicate the possibility that the operations produce some deficit in divergence and convergence necessary to maintain and recover single binocular vision. This effect is of questionable significance, and it is clear that these functions are not seriously altered. It is believed that the present experiments offer suggestive evidence toward the view that the subcortical levels of the central visual system serve a prime role in binocular perception and visual fusion independently of bilateral cortical integration. The exact functions of the subcortical optic system in visual depth perception, binocular fusion and movement vision are not directly disclosed by the present data. However, it may be suggested tentatively that the subcortical system, which is known to define primary ocular adjustments, may also provide the means for fusion of binocular images and consequent depth effects in seeing, the pattern and detail of which are refined at the level of the geniculo-striate system.

The Inferior Olivary Nucleus.

W. C. WILSON AND H. W. MAGOUN (*Journal of Comparative Neurology*, August, 1945), in an investigation on cats, add some information to knowledge of olivary connexions. The inferior olive is a conspicuous cell mass and its comparative neurological aspects have been intensively investigated, and although some of its connexions are known, specific evidence for its functional significance has been disappointingly meagre. One or both olives were removed from a number of cats and the animals were decerebrated. Following loss of one olive (with inevitable partial retrograde degeneration of the other), the animals exhibited abnormal movements of the vocal cord, predominantly on the side of the lesion. An intention tremor of the neck muscles was present and some head and body sway occurred on standing. Decomposition of movement, together with hypermetria in the use of the contralateral legs, contributed to ataxia in gait. When tested free, the contralateral legs exhibited an extensor hypertonus occasionally associated with an overactive patellar reflex. As a result of these symptoms, the animals frequently fell to the side of the lesion when standing or walking. With bilateral lesions, laryngeal myoclonus and hypermetria and extensor hypertonus of the extremities were bilaterally present. The characteristic tegmental response to mid-brain stimulation was not altered by loss of one or both olives, nor were inhibitory effects from stimulating the bulbar reticular formation impaired by olivectomy. The absence of one or both olives did not prevent the development of marked decerebrate rigidity. The results emphasize the apparently exclusive relation of the olive to cerebellar function—its loss is followed by cerebellar signs and in its absence the function of other brain stem motor mechanisms is not impaired.

Mechanical Responses of Retina to Light.

S. R. DETWILER (*The American Journal of Anatomy*, July, 1945) gives a review of the literature on retinal photomechanical responses (contraction of cones and migration of pigment in the cells of the pigment layer of the retina) and investigates the role of chemical factors. He also discusses the role of hormonal and nervous influences. Photomicrographs and diagrams are published.

Insertions of Extensor Digitorum Communis.

E. B. KAPLAN (*The Anatomical Record*, July, 1945) dissected the *extensor digitorum communis* in twenty-three fresh and embalmed human cadavers and found that the short insertion into the base of the proximal phalanx occurred in only 38·5% of the 140 fingers examined. Anatomical experiments showed that this insertion, contrary to accepted belief, is not essential functionally. The action of the extensor apparatus and of the intrinsic muscles of the hand was studied both by anatomical experimentation on the cadaver material and by electrical stimulation in more than 100 living subjects. This study emphasized the importance of the connexion between extensor tendon and the capsule of the metacarpo-phalangeal joint in the normal extension of the phalanges.

Sleep Centres in the Cortex.

C. DAVISON AND E. L. DEMUTH (*Archives of Neurology and Psychiatry*, June, 1945) investigated a number of cases of disturbances of sleep. In nine cases they were associated with lesions in the cortex. In none was there invasion of the hypothalamus. In two cases compression of the hypothalamus could not be completely excluded. On microscopic examination, however, there was no evidence of changes in the nerve cells. Increased intracranial pressure was present in only four of the nine cases. It is reasonable to assume that the role played by increased intracranial tension in dysfunction of sleep is negligible, if not totally insignificant. Ocular and endocrine disturbances, except for diplopia in one case and endocrine features in another, were absent from this group of cases. From the study of this series of cortical lesions the authors are of the opinion that some fibres for the control of sleep originate in the cerebral cortex, especially the hippocampal, cingular, frontal, premotor and temporal convolutions. These areas are connected with the hypothalamus by means of the corticohypothalamic pathways. Injury to these areas or to their connexions with the hypothalamus is occasionally the cause of pathologic sleep.

Interosseous Muscles of the Human Foot.

J. T. MANTER (*The Anatomical Record*, October, 1945) has studied the interosseous muscles of 149 feet and observed the following variations: (i) Examples of single heads of origin occurred in each of the dorsal interossei, but were more common in the case of the first and fourth. (ii) The muscles of the second interosseous space varied in the dorsal and plantar extent of their origins. Not uncommonly they displayed an arrangement intermediate between the human and the typical anthropoid pattern, an indication that in man these muscles have experienced a change in origin, rather than a regrouping of their insertions. (iii) A bifid tendon may be encountered in any of the interosseous muscles, but it occurred more often in the second dorsal muscle. (iv) On two occasions the belly of the second dorsal interosseous muscle was doubled. (v) Fusion of the second dorsal and first plantar interosseous occurred twice; it was demonstrated four times by the third dorsal and second plantar muscles. (vi) Two variable slips were present which might be considered to represent the missing interosseous of the plantar series. One is an adjunct of the oblique head of the *adductor hallucis*; the other, a band attaching to the lateral side of the first phalanx of the great toe.

Arteries and Veins of the Lungs.

A. B. APPLETON (*Journal of Anatomy*, July, 1945) examined the arterial and venous pattern of the right upper lobe in a series of fifty lungs with special reference to the distribution of the larger branches seen at the hilum in the broncho-pulmonary segments. The upper division or *truncus superior* of the right pulmonary artery generally divides into two or three branches, namely, the pectoral, apical and recurrent, this last being absent nearly as often as it is present. These arteries and unusual patterns as well as the veins of this region are described and figured.

Two Main Diameters of Female Pelvic Brim.

C. NICHOLSON (*Journal of Anatomy*, July, 1945) reports that pelvimetry by radiology in 640 cases is analysed to show that the length of the conjugate diameter of the female pelvis is very sensitive to nutrition, and that the figures quoted in textbooks of anatomy for this diameter is too low.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A meeting of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, Melbourne, on May 8, 1946, Dr. A. P. Derham, the newly elected President, in the chair.

Gargoylism.

Dr. J. W. Grieve showed a male child, aged fifteen months, with some of the features of *dysostosis multiplex* or gargoylism. The child had been born at term and the confinement was normal. His birth weight was seven pounds seven ounces. His mother suffered from a twisted ovarian cyst when she was five months pregnant, but this had subsided with the administration of morphine. She had a number of small vaginal hæmorrhages from six months till term. She had suffered from no infectious disease. The baby sucked poorly and breast feeding could not be established. No trouble was experienced with artificial feeding. At first "Lactogen" and later cow's milk mixtures were used.

Dr. Grieve said that he first saw the child when he was seven months old. The mother had observed some stiffness of the legs and hips and had commented on the fact that he had kept his fists clenched. She reported that he had been backward in development and made peculiar snorting noises. At seven months he weighed eighteen pounds six ounces, and his head circumference was eighteen and seven-eighth inches. The forehead was prominent. The breathing was snuffly, though no nasal discharge was present. The features were coarse and he was retarded mentally. There was limitation of movement at the elbows, fingers and knees. The corneæ were not clouded. No localized kyphosis was present and the spleen was not palpable. Dr. Colin Macdonald had reported that the X-ray appearances were consistent with a diagnosis of *dysostosis multiplex*. There was thickening of the frontal bones, the supraorbital ridges being wide and prominent. The calvarium presented a ground glass appearance and the *sella turcica* was small. The ribs were thick and heavy. The vertebræ showed some degree of platyspondylitis, but a hook on the anterior aspect of the twelfth thoracic or first lumbar vertebra could not be demonstrated. X-ray examination of the pelvis revealed bilateral subluxation of the hips and *coxa valga*. The subluxation was poorly defined on each side. The femora were thicker than normal.

Dr. Grieve said that all the stigmata were not present, but sufficient evidence was present to justify his making a definite diagnosis and leaving it in the category of *forme fruste*. A comprehensive article on the subject with good illustrations could be studied in *The Quarterly Journal of Medicine*, 1936.

Dr. Robert Southby said that this case was almost a replica of the case he had shown to the society in 1939. Gargoylism was unquestionably an absolute entity, like cretinism, mongolism and achondroplasia. In this case, some of the classical signs were not present, but the patient was only fifteen months old and there was ample time for them to develop. The hands and the general appearance were characteristic. Dr. Southby said that the child he had presented also had congenital dislocation of the hips; his brother, also a gargoyle, had the same abnormality. The hips became more and more flexed as the children grew older and both had succumbed to bronchopneumonia.

Tumour of Bone.

Dr. John Colquhoun showed a male child, aged ten years, with a tumour of his right femur. One month previously, after kicking a football, the child felt a stinging pain in the middle section of the right thigh anteriorly. The pain lasted a few minutes. The child had to cease playing after he made several attempts to resume the game. The pain occurred intermittently thereafter and lasted for minutes or hours and interfered with sleep. On examination the boy was pale and presented a diffuse swelling of the right thigh anteriorly in the middle third. This swelling appeared to extend about four inches in the long axis of the limb and about two inches transversely. The knee and hip region apeared normal, but the adductor muscles on the right side showed evidence of spasm. Flexion of the knee was limited beyond 90° by pain in the area of the swelling, but to this point was free and painless. On palpation there was exquisite tenderness over the swelling, especially at its proximal and distal limits and over its centre. The swelling was firm, but not hard. It was not fluctuant at any point. The inguinal glands were enlarged on both sides, but these were not tender or inflamed. The circumference of the right thigh six inches above the mid-patellar line was half an inch greater than the corresponding area of the left side. No abnormality was discovered on examination of the abdomen or the remainder of the body. The child's temperature was 101·8° F. when he was first seen, but during his stay in hospital it was usually subnormal and never rose above 99·4° F. The Wassermann test produced no reaction. The blood sedimentation rate was twenty millimetres per hour. The result of the Mantoux test was negative. The red cells numbered 4,500,000 per cubic millimetre. There were 15,200 white cells per cubic millimetre, and of these the polymorphonuclear cells numbered 56%, the lymphocytes 28% and the monocytes 5%. X-ray films had been taken at intervals. These showed irregular periosteal reaction and spotty absorption of the cortex in the middle section of the shaft of the lateral part of the right femur. No metastases could be seen in an X-ray photograph of the chest.

Dr. Colquhoun said that Ewing's tumour appeared to have an affinity for the long bones, particularly the upper third of the femoral shaft. There was frequently a history of trauma. Such tumours presented clinical signs of inflammation, such as periodic bouts of increased temperature, pain and local tenderness, but relatively little increase in the girth of the limb at the site of the tumour. The radiographs showed an increase in the width of the medullary cavity of the involved bone, coarseness, and later destruction of much of the cancellous bone and a gradual expansion of the shaft. Periosteal new bone was deposited in layers which might be clearly defined at the periphery. So diffuse was the margin between the normal and the tumour tissue that the limits of the latter could not be defined. Faint ill-defined shadows of calcium deposits might be seen in the soft tissues adjacent to the bone.

Dr. Kaye Scott discussed the matter of diagnosis. He said that the history of injury was not characteristic; it was a history of pain while playing football. Injury was often a real prelude to osteogenic sarcoma, but not Ewing's tumour. Also, the occurrence of pain usually preceded the local swelling; the reverse occurred with an osteogenic tumour. The temperature was more characteristic of Ewing's disease, this and other features sometimes simulating acute osteomyelitis. The radiological appearances in the early films suggested Ewing's tumour rather than osteogenic sarcoma, as the situation was in the centre of the shaft, a considerable length of bone was affected and changes involved cortex and medulla, with destruction of both. Furthermore, there was evidence of some endosteal reaction and subperiosteal tumefaction and reaction. As shown in the later film, the amount of subperiosteal bone proliferation was in excess of anything that had been seen previously in Ewing's tumour and seemed to necessitate a radiological diagnosis of osteogenic sarcoma in spite of the other findings. The discrete rounded patches of calcification lying beyond the periosteum could not be readily accounted for. Dr. Kaye Scott then suggested that estimation of serum alkaline phosphatase content would help—this was raised in osteogenic sarcoma, but normal in Ewing's tumour. The next step was an aspiration biopsy. This procedure did not open up tissue planes as would a surgical incision and risks of fungation were avoided. However, only small amounts of tissue could be obtained, but usually sufficient for the necessary diagnosis. If this failed, a therapeutic test of radiation should be given, Ewing's tumour being remarkably sensitive in contrast to the osteogenic sarcoma. Only as a last resort should surgical incision be made into a tumour likely to be osteogenic, so great was the risk of fungation.

A definite diagnosis was needed as radiation techniques were essentially different for the two conditions. Ewing's tumour had been variously regarded as a round-celled sarcoma, a perivascular endothelioma, a reticular-celled sarcoma, while Willis, when in Melbourne, had shown that a primary neuroblastoma in ganglionic tissue resulted in bone metastases which appeared as Ewing's tumours. Dr. Kaye Scott mentioned that in the last two cases in patients under his care, primary neurogenic tumours were responsible. One case came to autopsy at the Austin Hospital, and macroscopic examination of the adrenals showed nothing abnormal, whereas histological examination revealed a very small primary adrenal neuroblastoma. In the other case there were present bone secondaries which exactly reproduced a classical Ewing's syndrome, secondary to a retinoblastoma in an infant. Thus in all cases the radiotherapist was bound to treat the area between the first lumbar and the second sacral segments in which Willis had found most primary tumours, as well as the bony lesions.

Dr. Kaye Scott, in discussing radiosensitivity of Ewing's tumour, pointed out that in every cell population variability of sensitivity of individual cells was present, and while in Ewing's tumour the majority of the cells were extremely sensitive, a resistant proportion persisted. Even after heavy radiation autopsy specimens showed residual neoplastic cells, and while the main mass of the tumour disappeared and regeneration occurred, local recurrence was the rule unless repeated doses were given. Invariably death occurred as a result of multiple bone metastases, with skull secondaries usually a prominent terminal feature. The radiation technique used in Ewing's tumour depended on these facts. A short intensive course was administered to the initial bone manifestation, and was repeated at intervals. As soon as possible the paralumbar areas were treated against a possible primary growth, and other bone metastases were radiated according to indication. In the presence of terminal cachexia, radiation therapy was used only to control pain or sites of possible fungation.

The treatment regimen that Dr. Kaye Scott favoured for osteogenic sarcoma depended upon the relative nonsensitivity of the group of connective tissues and upon the factors of rapid dissemination by blood stream of tumours arising from them. Epithelial tissues were more radiosensitive than connective tissues. This "tissue sensitivity" depended upon the capacity of cells of the tissue to reproduce themselves under varying conditions. Radiation dosage could be administered to certain epithelial tumours with destruction of the component cells and without damage to the stroma, but dosage sufficient to cause similar death of tumour cells in a sarcoma of bone or connective tissue would result in massive necrosis. It was known that the sensitivity of tumour cells in mitotic phases was greater than that of the resting tumour cells. Stebbins, of London, suggested that small doses of radiation administered to such tumours over a prolonged period might produce results, and by the use of such dosage methods with overall treatment times prolonged to ten weeks, diminution of tumour and regeneration of destroyed bone often occurred. Such courses were then repeated at intervals.

Dr. Kaye Scott said that among his early cases in which patients were treated along such lines, two had survived, to show recurrences at four and a half years and seven years; one, still well, had remained symptom-free for seven years. He did not believe that even this radiation technique was adequate to kill all the tumour cells and considered that amputation should follow the radiation at the appropriate time. All surgeons were depressed by the inevitable mortality following immediate amputation. Dr. Kaye Scott considered that any damage to tissues liberated growth-promoting substances which stimulated normal healing processes. Following a large operation it was probable that circulation of such substances stimulated into active growth any metastatic tumour cells in distant sites. He drew attention to the frequency with which enlarged supraclavicular glands were found immediately following operation for carcinoma of the breast—it could not be imagined that these had been missed in the preliminary examination. The only explanation was fulmination in the post-operative convalescent stage of microscopic deposits in glands not then clinically enlarged. Dr. C. H. Kellaway had demonstrated growth-promoting substances of tissue origin in work done before he left Melbourne. However, the body had defence mechanisms against deposited tumour cells and it was probable that but few of the malignant emboli which reached the pulmonary capillary bed ever survived. But the lungs could not stand up to continuous flooding with metastatic cells without the development of some secondary deposits.

Dr. Kaye Scott thought that probably radiation of the bone primary caused early inactivation of the tumour with less tendency for blood-borne metastasis to occur. If such was the case the lungs had better opportunity of dealing with any tumour cells already deposited, especially if the patient's general condition was improved simultaneously as a result of appropriate medical and dietetic treatment. He quoted the experiments in which implanted mammary carcinomata in mice were treated with vigorous massage. Mice killed some hours later showed very many carcinoma cells in the pulmonary capillary bed, but control mice killed some weeks later showed but few surviving pulmonary metastases, indicating the capacity of the lungs to deal with the foreign cells.

Application of these facts to the treatment of osteogenic sarcoma indicated that the primary treatment should be prolonged courses of radiation to the primary site over a period of twelve to eighteen months. During this time every effort should be made to improve the patient's general condition so that he was offered the maximum chance of overcoming his own pulmonary secondaries; and on this fact treatment availed or failed. After eighteen months, in the absence of secondaries, or earlier if radiation was failing to control the primary growth, amputation should be undertaken. Dr. Kaye Scott said that radiation failed to control the primary osteogenic sarcoma in a minor proportion of the cases, that pulmonary deposits appeared immediately in others, but that in some cases the appearance of secondaries seemed to have been delayed. In only a small proportion had total success been obtained, and in some of these amputation had not been possible on account of the site. Osteogenic sarcoma in a child was still a very fatal disease.

DR. J. G. WHITAKER thanked Dr. Scott for his illuminating remarks. He asked, if a negative result was obtained by aspiration of the tumour, whether incision and biopsy would be considered before radiotherapy was used. Dr. Scott replied that there was not the same risk of biopsy in Ewing's as in osteogenic sarcoma, as immediate X-ray therapy would prevent fungation in the former condition. The natural protective barriers of the expanded tissue planes should be preserved in osteogenic sarcoma—incision undoubtedly stimulated growth and fungation was a dreaded but frequent complication. If biopsy was essential the aspiration biopsy needle should be used. A large bore blood transfusion needle with the centre coned out forming sharp edges to the needle bevel was used. It was connected to a twenty-millilitre syringe to give heavy suction. Satisfactory quantities of tissue for histological examination usually could be obtained without excessive trauma or tissue damage. Experience had proved that the aspiration biopsy needle was an invaluable aid in the accurate diagnosis of suspected tumour. Incision for biopsy should be carried out only as a last resort when osteogenic sarcoma was suspected.

Dr. Colquhoun, in reply, referred to an experience he had had as a house surgeon. A child had a tumour of the ilium which was cut down upon. The surgeon made a tentative diagnosis of osteomyelitis, but sent a specimen for biopsy. Professor Wollbach reported chronic inflammatory tissue. However, the wound fungated and the child succumbed. At post-mortem examination another pathologist after an intensive search found two tumour cells in a large mass of tissue. It therefore seemed that there was quite a chance that it would not be possible to make a diagnosis by biopsy. The evidence favoured Ewing's tumour and he felt inclined to submit the child to radiotherapy.

(*To be continued.*)

◆

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 105, of June 6, 1946.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointments of the following officers are terminated on demobilization with effect from the dates indicated: Temporary Squadron Leader C. B. Hudson (263255), 15th March, 1946, (Temporary Flight Lieutenants) N. G. Dobell-Brown (267113), 11th March, 1946, C. R. Watson (266788), 14th March, 1946, G. B. Goswell (267238), 15th March, 1946.

Reserve: Medical Branch.

William Peter Harvey Dakin (261274) is appointed to a commission with the temporary rank of Squadron Leader with effect from 5th December, 1945.—(Ex. Min. No. 156—Approved 29th May, 1946.)

CASUALTIES.

ACCORDING to the casualty lists received on June 12, 1946, Captain E. C. Eagleton, Nedlands, Western Australia, is reported as having died of illness.

Correspondence.

SPINAL ANÆSTHESIA AND CHLOROFORM: A COMPARISON OF MORTALITY.

SIR: I was not surprised to read the letters commenting on my recent paper of April 20 on comparative mortality statistics of spinal anæsthesia and chloroform. I have read the same sort of thing in back numbers of *The Lancet* of 1878, resenting Lister's new surgery. People do not like questioners, sceptics, and inconvenient disturbers of their minds, not even when they are right. Sacrilege is unpardonable. The same sort of thing can be noted in back numbers of *The Lancet* and *British Medical Journal* of 1890 and around that time, when the chloroform men were angrily throwing what bricks they could against the statistics (very awkward statistics) shown by the advocates of ether. Those statistics were greatly disliked. Men were told they did not mean what they seemed to mean; and so on.

Your correspondent Dr. J. E. M. Thomas is well in line with the older reactionaries. He tells us (wisely) that he has no intention of entering into pros and cons, but writes "to protest against the uncritical use of data in this so-called statistical study". He does not like the data. However, I did not make them. People died. That was how the data were made. People will continue to die, just like the others, unless we find some way of effecting an improvement. That is the reason for "so-called statistical study". A worth-while study, or so I think.

Then, "with a disregard for space and time which even Einstein might envy", I am said to do various things and, having done them, to present "a figure purporting to show that spinal anæsthesia is much more dangerous than chloroform anæsthesia of fifty years ago". Did I? After all, here is what I really did say, and this time I will put some of it in italics, so that there can be no more perversion. "*If the statistics are soundly based,* the chloroform anæsthesia of fifty years ago was at the least twice as safe as the spinal anæsthesia of today." (Your correspondent Dr. Marshall thinks I should have said "fifteen years ago", instead of "today".) However, it seems that Dr. Thomas is angry because I have brought the matter up at all. For he cannot but agree with what I really did say, as just quoted, and it would have been much better if he had quoted correctly. He may not think the statistics are correct. He may wish them to be incorrect. But as I have said, I did not invent them, and, correct or incorrect, why hide them from inspection? Dr. Thomas tells us that the material should have been left "decently buried". Well, it was not. Dr. Thomas's method of deciding questions has always had many followers. What about the patients who might also be buried, decently perhaps, but who might otherwise have lived? These are serious matters that we are discussing.

In the third paragraph of his letter, Dr. Thomas charges to me "the fallacy of the assumption that every death on the operating table is to be attributed to the anæsthesia". That is one of Dr. Thomas's methods of controversy, and it does him no credit. Let your readers turn to the latter part of my article where I make the remark: "They may be inclined to say that it is not spinal anæsthesia that causes the deaths, but its practitioners. They are certain to be at least partly right—but it would appear from Babcock's experience that skill is not everything."

In his fourth paragraph I found Dr. Thomas still not particular as to accuracy. Why swell 20,012 cases so carelessly up to 50,000?

Dr. Thomas spends some effort on presenting a view that spinal anæsthesia patients of today are worse risks than the chloroform patients of fifty years ago, because at that time the scope of surgery was smaller, and his suggestion is that it made the risk smaller, so that "to compare the patients of the chloroform era with those of today is completely unjustifiable".

As for the difference in risks, there have always been bad risks. If we can say anything, I think we can say that, on the whole, the risks are much better than they were fifty years ago; not worse, as Dr. Thomas suggests. At that time comparatively few patients were operated on while they were in a good condition. Operations were much more dangerous, and people had often good reason to doubt whether an operation might not be worse than the risk of the disease. Operations were postponed until the patient was very ill. They were operated on when it became obvious that there was little chance without it. And then they had an anæsthetic. On this came controversy. Ether had begun to compete with chloroform. Mortality records were compared. Some of the chloroform figures were those I quoted in my article as showing up so much better than the spinal cases, as far as over-all statistics were concerned. And yet those chloroform records were considered a reproach, as compared with ether, which means, of course, the ether results of those days.

And then came the Second Hyderabad Commission, with Surgeon-Major Lawrie as President, and Sir Lauder Brunton, F.R.S., as one of its members. This commission ended its report(1) by saying that if the method they described were carefully used, there would be no deaths from chloroform, "which could be given with perfect ease and perfect safety". Any deaths that occurred would therefore be due solely to the fault of the practitioner, not to chloroform as an anæsthetic. Lawrie pushed these opinions very vigorously in *The Lancet* and in the *British Medical Journal*. In an article in the *British Medical Journal*(2) he said that "no anæsthetic is absolutely safe except chloroform administered on Syme's principles". In the same article, he expressed the opinion that the publication of Julliard's(3) figures of 524,507 cases of chloroform anæsthesia with 161 deaths, or 1 in 3,258, and Roger Williams's(4) list of 12,368 with 10 deaths, or 1 in 1,236 (appearing in my article as quoted by Waller), were "intended to show the danger of chloroform", though in my article they would be used to show the relative safety of chloroform. Lawrie had to admit that there were deaths, but in his view they were all, without exception, the fault of the practitioner. In a clinical lecture published in *The Lancet*(5) he put forth a series of 45,000 cases of chloroform anæsthesia, extending over forty years, without a death.

Lawrie has passed on, but his spirit survives. Reincarnated, it has taken up spinal anæsthesia, and speaks through your correspondents, who tell us that if deaths occur, it is the fault of the practitioners, or, as Dr. Marshall would say, because they still persist in using the methods of fifteen years ago, which produced the death rate recorded in 1932.

But what is this new technique that has made that of fifteen years ago obsolete? I have mentioned Ansbro and Pico.(6) They claimed that the technique described in their article of 1942 as "continuous spinal anæsthesia" made spinal anæsthesia newly safe. They did not prove it, but they said it was so, and they contributed 100 cases without a death in support of it. They then set about contrasting the new method with what they alleged was the great mortality of "single dose" technique, and they quoted Babcock's 15,652 cases with a mortality of 1 in 391 as going to prove it. They quoted other results which they represented as much worse than Babcock's statistics, for example, a shocking mortality rate from the Toronto General Hospital. As to that, I have received a private letter from Dr. Shields, chief anæsthetist of the hospital, which shows the figures to be completely false, and wholly and entirely a fabrication.

Now, is this the modern technique that your two correspondents—my critics—say has superseded that of not so long ago? Is it what they practise? Or are they still "single dose" spinal anæsthetists, to be placed by Ansbro and Pico amongst the back numbers of fifteen years ago?

There is more to be said than that. We are told, on "I say so" authority, not to admit certain serious scientific work that I have made use of. Is it because it discovers something that your correspondents would keep hidden? As far as I know, these are the only researches of the kind that have ever been published. They remain in the literature to this day what they were then, the only source from which we can get uncoloured over-all figures. We can get statistics from particular men or groups of men. They are useful and interesting. But we want also something that is as nearly as possible a census of all cases, all results, all administrants. That is what an insurance office would want to know. But it is not the information that comes from Thomases and Marshalls, or from anybody who would be willing to see some of the truth "decently buried". There is a lot of burying done, as happened years ago in one of our hospitals when in one week there were three deaths from a certain anæsthetic. The journals get the favourable notices, not the whole facts.

In the concluding part of my paper, I put in, for the benefit of spinal anæsthesia, 11,000 cases assumed to be completed without a single death, whereas there had been already 20,012 with 56 deaths. These 11,000 were, by convention, distributed to eleven men who had an experience of 1,000 cases in ten years without a single death. I remarked that "at the end of the period there would be a number of men who could get up at a medical meeting and tell about their success, or perhaps they would write about it. They are likely to feel pretty sure about their skill, and rightly so. They may also feel that it will not happen to them to have deaths, such as others have had. They may be inclined to say that it is not spinal anæsthesia that causes the deaths, but its practitioners", and so on. I had previously warned against picking out individual experiences, even our own, and using them as representative of all, since that would involve the fallacy of arguing from the particular to the general.

Well, it has come about as I prophesied. Here are two of our eleven. We are told that it is the so-much-improved technique that is used, or not used, that makes all the difference. It is what the practitioner does, or fails to do. That is all. And that is the Hyderabad Commission and Surgeon-Major Lawrie over again.

Then, as to arguing from the particular to the general. Dr. Marshall tosses all that aside. He insists that "local figures or opinions" would have afforded me "valuable enlightenment".

Opinions! Enlightenment! I want the whole truth. So would intelligent patients. So would insurance companies, if they were interested. So would many readers of this journal, who have to make up their minds on behalf of their patients in these grave matters.

Yours, etc.,
C. E. CORLETTE.

Sydney,
May 30, 1946.

References.

(1) "Report of Second Hyderabad Chloroform Commission", *The Lancet*, Volume I, January 18, 1890, page 149.

(2) E. Lawrie: "Chloroform or Ether?", *British Medical Journal*, Volume I, June 13, 1891, page 1380.

(3) Julliard: Quoted in leading article, "Ether or Chloroform", *British Medical Journal*, Volume I, April 25, 1891, page 920.

(4) Letter in *The Lancet*, Volume I, February 8, 1890, page 317.

(5) E. Lawrie: "Clinical Lecture on the Hyderabad Chloroform Commission *et cetera*", *The Lancet*, Volume II, November 29, 1890, page 1143.

(6) F. P. Ansbro and L. J. Pico: "Continuous Spinal Anæsthesia: Report of 100 Cases in which this Method was Employed", *The American Journal of Surgery*, New Series, Volume LV, March, 1942, page 504.

THE NATIONAL HEALTH SERVICE BILL OF GREAT BRITAIN.

SIR: In the editorial of THE MEDICAL JOURNAL OF AUSTRALIA of April 13, 1946, was published the criticism of the British health plan drawn up by the British Medical Association.

Four main principles were stated which form the basis of opposition to the plan and which require further discussion in relation to the plan.

Principle I: It is misleading to claim this principle on behalf of the medical profession as a whole, in view of the fact that the referendum among the British practitioners revealed a willingness among a large proportion to serve in a salaried scheme. However, this principle implies that the acceptance of a salaried medical service is not "in the public interest" and that the profession will thereby become less efficient and less sincere.

At present the poor and middle classes do not have a complete health service; only the wealthy are able to avail themselves of every facility.

Any attempt to provide a complete service for all is obviously in the public interest.

Political and social trends indicate that sooner or later the medical profession must become a salaried service. It has been said that there are too many young men and women entering the profession; yet it is common knowledge that the wealthier residential areas at present are served by a far larger number of doctors than the poorer ones. A properly organized salaried medical service will require a greater number of doctors than at present to provide adequate services everywhere. This in turn will call for far more students not only in medicine, but in dentistry and other professions.

Principle IV: Like all other workers, doctors have a very limited choice in the form, place and type of work, their desires being governed by outside, mainly economic, conditions. Only a few with adequate resources can follow a predetermined career. Opportunities for medical education and specialization will be much greater under the salaried medical scheme than at present.

Principles V and VII are acceptable to everyone. The profession must insist that any qualified and registered practitioner has a right to practise in any government medical service; but it is difficult to understand the inclusion of these two principles in view of the fact that Council apparently intends to recommend the non-acceptance of the scheme as a whole.

I would submit two criteria which I consider should form the basis on which the efficiency of any service should be judged: (1) Every citizen has a right to free medical service from birth to death—service being regarded as fulfilling every requirement for the maintenance of health and treatment of disease. (2) It is the right of every citizen to receive from the State an education, free and adequate to fit him for the vocation of his choice.

The present form of medical practice requires, therefore, considerable alteration. Fellow members might well devote more time to social problems both as they relate to the profession and generally.

Any plan to be of greatest benefit to both patients and profession must be drawn up by the profession itself. How otherwise can we ensure that it does not include any undesirable features? Such a move has already begun. Many local associations are of the opinion that the question of a salaried medical service should be discussed, and in 1944 the Warringah Association actually drew up plans for such a service.

As a salaried medical service would be a progressive and beneficial step, the councils of the British Medical Association should reconsider their present official attitude and really become front-rank champions of progress in health matters.

Yours, etc.,
STEFANIA SIEDLECKY.

The Rachel Forster Hospital,
Redfern,
New South Wales.
May 30, 1946.

THE PHARMACEUTICAL BENEFITS ACT, 1945.

SIR: Concerning the following reply to Dr. F. W. Simpson's statements about me in your journal of September 15, 1945, I wish to point out that the chief cause of delay in my response has been ill health.

As far back as October, 1945, I had asked for relief on this ground; unfortunately this was not possible, and in January, 1946, my health broke down completely and I had to commence an extended rest immediately.

Dr. Simpson accused me of "bitterly slating the British Medical Association" in the *West Australian*. This is not true. Readers will please note:

1. If I wanted to attack the Association, I would name it.
2. The Association was not mentioned in the letter referred to.
3. The Association's objection to the "personal examination" clause in the act was publicly championed by me in it. This is what Dr. Simpson calls "bitterly slating the Association".

The attack on the act was originated from well-known non-medical sources and was supported with much free space by the daily Press. I "bitterly slated" these groups and their virulent hostility to improved social services.

It might be said that this letter was an indirect attack on the Association; I can only say that such an idea is merely an inferential assumption based on a situation I did not help to create, as I have never attempted to involve the Association in the political campaigns of the aforementioned groups and their Press.

Yours, etc.,
LESLIE R. JURY.

38, Strickland Street,
South Perth,
May 20, 1946.

PLACENTA PRÆVIA.

SIR: I was pleased to see that I did get a reply from Professor Bruce Mayes to my letter in THE MEDICAL JOURNAL OF AUSTRALIA of April 6, 1946.

Firstly, the annual hospital report of the Glasgow Royal Maternity and Women's Hospital for 1937 shows that from 4,724 admissions, ante-partum hæmorrhage was present in 305 cases. Two hundred and twenty-four Cæsarean sections were done from all obstetric abnormalities. Dr. Hart was registrar in that hospital from 1929 to 1933, during which time he must have been responsible for the admission and supervision of 1,200 cases of ante-partum hæmorrhage.

Professor Munro Kerr, retired from active practice in 1929, quotes shock, hæmorrhage, and collapse accounted for 70% and sepsis for 30% of deaths during his time at the Glasgow Maternity Hospital (*The Journal of Obstetrics and Gynæcology of the British Empire*, June, 1939, page 535).

From the above statistics it is obvious that the majority of the deaths could have been prevented by an early diagnosis in doubtful cases by the examination without a glove when the patient is in good condition with a mortality rate of less than 1%. Mortality rates in the region of 10%, as quoted in Dr. Syred's paper, could easily be reduced to less than 1% by the employment of procedures which have been in vogue in Glasgow for ten years.

Secondly, I agree that Cæsarean section under general anæsthesia is a serious operation and will never be done by me again after having found the simplicity of a local anæsthetic. During the past three years I have done fourteen Cæsarean sections under local anæsthesia, and the nurses find that the patients have no more discomfort than those having had an appendix removed. Previous to that I did one operation under general anæsthesia in which the patient nearly bled to death and cured me for all time of this form of delivery.

Yours, etc.,
J. N. R. STEPHEN.

Stockton,
New South Wales,
May 27, 1946.

HONORARY MEDICAL STAFFS.

SIR: The Council has recently published in the monthly notices the following resolution:

> That the Council is of the opinion that a vacancy on the senior honorary staff of a public hospital should be filled by the candidate already on the honorary staff and next in line of succession, provided that he has carried out his duties efficiently and to the satisfaction of the board of the hospital. . . .

I wish to place on record my emphatic disagreement. I consider the resolution is not in the best interests of either public or profession.

In the first place, it seems to me to negative that very principle of free competition so generally acclaimed of late. The man on the spot who has served the hospital long and well should have already a sufficient advantage over his competitors; also, the public should be able to get the best man available.

The system advocated by Council means:

1. That if two men are equally qualified for a hospital appointment, the one who travels abroad for a number of years is that much junior to his colleague on his return.
2. That the capable country surgeon who finally comes to Sydney, perhaps because his children have grown up, has only one place—the bottom. He has not the chance to place his qualifications fairly in the scale against the city man who is already on the staff.
3. That there is still only one place—the bottom—for the experienced man from another country or State who desires to settle in Sydney and take up a public hospital appointment. Doubtless, leave for an honorary here would be granted for one or two years for study abroad, but should he wish to spend five years or even be uncertain of his return at all, and finally come back—a vastly improved man—would not he have to climb the ladder all over again, if he were not considered too old?
4. That once on the staff, there is no need to improve; it is enough to do one's routine duties and wait for promotion.

Yours, etc.,
C. C. MCKELLAR.

"Harley",
143, Macquarie Street,
Sydney.
June 7, 1946.

RESEARCH AT THE KANEMATSU INSTITUTE.

SIR: The expressed anxiety of the Board of Directors of Sydney Hospital to reopen the research section of the Kanematsu Institute is in contrast to the haste and secrecy with which the decision to suspend research was made by the Board before the possibility of the decision becoming a matter of public interest was apparent.

The explanation made by the Board in justification of its action is based on two major points: lack of funds and the disintegration of Dr. Eccles's research team.

It was to be expected that after the resignation of Dr. Eccles his collaborators in neurophysiological investigation would move to laboratories where they could work once more in association with masters in their chosen field.

It is not customary for research institutes to suspend activities because of the dispersal of one research group. Rather is it the practice of competent administrators anxious to foster research to maintain a continuity of investigational endeavour by building new teams of workers around any nucleus of research in being. In all research institutes workers come and go; such interchange is favoured and encouraged by those knowing something of the needs of research and of research workers. This is probably the only occasion on which such a natural process as the dispersal of a research team has been seriously adduced as a reason for closing a laboratory in which active research was still in progress.

The Board of Directors has stated in the lay Press that research at the Kanematsu Institute was "virtually at a standstill". If such were the case, why did the Board sanction the expenditure of £4,933, which included grants of £645 from the National Health and Medical Research Council, on such research during 1945? The research on which this amount was spent with the full knowledge of the Board was, with the exception of that in the hands of Dr. Kuffler, still in progress and giving promise of further development when the Board's instruction to suspend all research on April 1 was transmitted to me on March 1.

With what knowledge or on what well-informed advice was this decision to suspend activities reached? No member of the Board ever took the trouble to inquire what research was in train or what was contemplated. In a letter from the secretary of the hospital to the acting director, written towards the end of 1945 and conveying a ruling of the Board on the functions of the Kanematsu Advisory Committee, it was stated that this committee was to advise the Board on matters of scientific importance. This committee was not consulted on the question of suspending research; on the contrary it was abolished on April 1. It would seem that the Board did not consider the suspension of research a matter of scientific importance. The Board did not inquire from any competent authority what work would be interrupted by the implementing of its decision, what the remote effects of the decision might be, or whether any alternative suggestions could be made; suggestions which might have spared the Board its present anxiety to reopen an institute which should never have been closed.

It has not been revealed by the Board that early this year Dr. F. B. Byrom, post-graduate lecturer in pathology in the University of Sydney, was refused permission to work for a short time in the institute by the House Committee of the Board on the grounds that there was no accommodation for him. Yet I, as acting director, had informed the president of the Board that ample accommodation was available. Dr. Byrom's work was to be financed from extraneous sources and would not have called for any support from Kanematsu funds. Did this refusal to help a research worker of the status of Dr. Byrom betoken anxiety to foster research?

During the past two years several research workers, some of senior status, sought to join the research staff of the institute, and there is no reason to suppose that, had encouragement been offered, recruits would have been lacking after April 1, 1946.

Much is made of the "temporary" nature of the suspension of research. Why should a temporary suspension call for the abolition of the Kanematsu Advisory Committee? Would not a board anxious to promote research have consulted the committee as to how research might be maintained most effectively in the face of any obstacles and on ways and means of obtaining additional financial support—from private sources, for example—while the accumulated subsidies were being spent as the Hospitals Commission had directed?

It was from the annual subsidies paid by the Hospitals Commission that the bulk of the £8,000 capitalized by the Board was derived. When the president of the Board of Sydney Hospital, who was also chairman of the Kanematsu Advisory Committee, was vice-chairman of the Hospitals Commission, certain members of that commission had already raised the question of suspending the annual grant to the Kanematsu Institute because of the amounts that had been accumulated from these grants. Soon after the commission was reconstituted late in 1944 the subsidy was in fact suspended. When two deputations from Sydney Hospital discussed Kanematsu Institute finances with the Minister for Health last year, the discussions were based on the assumption that the £8,000 now said to represent an endowment fund was available for use as liquid assets. It was never claimed on behalf of the hospital that only some £2,000 or £3,000 was at its disposal for the prosecution of research. Yet this, if a valid claim, would have strengthened greatly the hospital's request for a continuance of the annual subsidy.

The Board's statement reveals that from July 1, 1945, the cost of research has been £2,700. Assuming that the same rate of expenditure—£3,600 *per annum*—were maintained, a simple calculation will show that, with interest at 3% on residual funds, the £8,300 still available for use as liquid assets would, apart from any special grants, suffice for nearly three years; not for "about eighteen months only". There would still remain £8,000 unquestioned endowment.

If the Board considered that it had a legal right to "create" an endowment fund from accumulated subsidies, then it was, on April 1, legally competent as well as morally bound to reconvert these moneys to liquid assets to be used for the maintenance of research in being. Instead it wantonly betrayed a trust which it assumed when it originally called the research unit into being and, ignoring a written protest from me which incorporated a plan for the continuation of research with a minimal expenditure, struck at the very basis of security in research careers by destroying the research activities of one of the all too few centres of medical investigation in the Commonwealth.

The Board ends its statement by the publication of certain selected letters. I suggest that in the interests of truth it publishes all the correspondence between the Board and the Hospitals Commission and between the Board and myself which relates to the events leading to the suspension of research activities, to my rejection of the offer of the directorship of the emasculated institute and resignation from the staff of the hospital, and to events subsequent to my resignation.

Yours, etc.,
A. J. CANNY.

16, David Street,
Clifton Gardens,
New South Wales.
June 10, 1946.

TRIGEMINAL NEURALGIA.

SIR: It can surely serve no good purpose to publish the isolated experience of one individual as a condemnation of a universally accepted form of treatment.

The portion of the correspondence of Dr. Alec Lyons (THE MEDICAL JOURNAL OF AUSTRALIA, May 25, 1946) to which I take exception is as follows: "I can state that interference with the sensory root of the fifth cranial nerve is worse than useless."

Yet, perhaps, there is truth in the above statement. "Interference" with any structure is, to say the least of it, undesirable. However, clean-cut surgical division of the fifth nerve root has, does and always will relieve trigeminal neuralgia except in the cases of those unfortunates whose nervous stability has been ruined by a multiplicity of unsuccessful treatments and those in which an irremovable tumour is the cause of pain.

Yours, etc.,
F. J. CLARK.

194, St. George's Terrace,
Perth,
June 5, 1946.

University Intelligence.

THE UNIVERSITY OF MELBOURNE.

NUFFIELD MEDICAL ENDOWMENT.

THE University of Melbourne has the right under Lord Nuffield's scheme for the endowment of demonstratorships and clinical assistantships for dominion university graduates at Oxford University Medical School to nominate one of the following for appointment in October, 1946: (*a*) a demonstrator in biochemistry, (*b*) a demonstrator in pharmacology, (*c*) a clinical assistant in surgery, (*d*) a demonstrator in physiology.

Members of the staff or graduates of the University who wish to be nominated are invited to apply to the Registrar of the University of Melbourne before July 6, 1946.

To be eligible for nomination, the candidate must (i) hold a medical qualification by virtue of his being a medical graduate of a university in Australia, New Zealand or South Africa; (ii) have had experience in research; (iii) intend to return on termination of his appointment to Australia for at least five years' work of a like nature to that carried out during the appointment.

The appointment is for three years, and the emoluments are £400 sterling *per annum* in the case of a woman or of an unmarried man, and £600 sterling *per annum* in the case of a married man, payable quarterly in advance, save that the last such instalment is payable in arrear and only on return to Australia or New Zealand. The sum of £150 is also provided for travelling expenses, one-half to be paid on appointment and the remaining half on termination of the appointment. A person appointed will not be permitted to enter for any professional examination except with the consent of the head of his department.

Post-Graduate Work.

COURSE IN CLINICAL PATHOLOGY AT SYDNEY.

THE Post-Graduate Committee in Medicine announces that a course in clinical pathology will begin on July 29, 1946, for a period of twelve weeks, and will be held at the University of Sydney.

The programme has been arranged to take place in the afternoons from 4.30 to 6.30 o'clock p.m. every Monday, Wednesday and Friday, and will include lecture demonstrations in bacteriology, parasitology, histology, hæmatology and biochemistry. Enrolments are limited to twelve and preference will be given to those candidates who intend taking the diploma examination. An announcement concerning the fees involved will be made shortly and applications should be forwarded to the Secretary of the Post-Graduate Committee, 131, Macquarie Street, Sydney. Telephones: BW 7483, B 4606.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Marrington, John Frederick, M.B., 1945 (Univ. Sydney), 9, Tivoli Street, Mosman.
King, Errol Edward Trevor, M.B., B.S., 1945 (Univ. Sydney), 275, Edgecliff Road, Edgecliff.
Colvin, Cecil Brereton, M.B., B.S., 1942 (Univ. Sydney), Newcastle Street, East Maitland.
Hambly, Colin Keith, M.B., B.S., 1941 (Univ. Sydney), Flat 4, Astor, Pitt Street, Randwick.
Weekes, Hazel Claire, M.B., 1945 (Univ. Sydney), 30, Fairweather Street, Bellevue Hill.

Obituary.

ROBERT WARREN CROOKE.

WE regret to announce the death of Dr. Robert Warren Crooke, which occurred on June 12, 1946, at Wentworthville, New South Wales.

ERNEST JOHN FRAYNE.

WE regret to announce the death of Dr. Ernest John Frayne, which occurred on June 5, 1946, at Adelaide.

Australian Medical Board Proceedings.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Statham, Cecily Faith, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.
Young, Lloyd Alan Forbes, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.
Elder, Janet Lucile, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.
Long, Winifred Mary, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.

Connard, Allan Barrie, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.
Lowen, Walter, M.B., B.S., 1945 (Univ. Melbourne), General Hospital, Launceston.
Moloney, William Rex, M.B., B.S., 1939 (Univ. Melbourne), Cameron Street, Launceston.
Suerth, Egon, M.D., 1934 (Messina), Beaconsfield, Tasmania.
Rayment, Dulcie Grace, M.B., B.S., 1943 (Univ. Melbourne), Macquarie Street, Hobart.
Anderson, Arthur Brayton, M.B., Ch.B., 1927 (Univ. Liverpool), Repatriation Department, Hobart.

Notice.

Members of the New South Wales Branch who have returned to, or commenced practice, and whose telephone numbers do not appear in the recent issue of the telephone directory, may have their number inserted in the "Monthly Notice to Members" upon making a request in writing to the Medical Secretary of the New South Wales Branch.

Books Received.

"The 1945 Year Book of Urology", by Oswald S. Lowsley, M.D., F.A.C.S.; 1946. Chicago: The Year Book Publishers, Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7″ × 4¾″, pp. 416, with illustrations. Price: 24s.

"The 1945 Year Book of Physical Medicine", edited by Richard Kovács, M.D.; 1946. Chicago: The Year Book Publishers, Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7″ × 4¾″, pp. 400, with many illustrations. Price: 24s.

"The 1945 Year Book of Industrial and Orthopædic Surgery", edited by Charles F. Painter, M.D.; 1946. Chicago: The Year Book Publishers, Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7″ × 4¾″, pp. 432, with many illustrations. Price 24s.

"The 1945 Year Book of General Therapeutics", edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P.; 1946. Chicago: The Year Book Publishers Incorporated. 7″ × 4¾″, pp. 456, with illustrations. Price: 24s.

"The 1945 Year Book of Neurology, Psychiatry and Endocrinology"; Neurology—edited by Hans H. Reese, M.D., and Mabel G. Masten, M.D.; Psychiatry—edited by Nolan D. C. Lewis, M.D.; Endocrinology—edited by Elmer L. Sevringhaus, M.D.; 1946. Chicago: The Year Book Publishers Incorporated. 7″ × 4¾″, pp. 720, with illustrations. Price: 24s.

"Ambulatory Proctology", by Alfred J. Cantor, M.D., with a foreword by Beaumont S. Cornell, M.D.; 1946. New York and London: Paul B. Hoeber Incorporated. 9¼″ × 6″, pp. 544, with many illustrations. Price: $8.00.

"Shock Treatments and Other Somatic Procedures in Psychiatry", by Lothar B. Kalinowsky, M.D., and Paul H. Hoch, M.D., with a foreword by Nolan D. C. Lewis, M.D.; 1946. New York: Grune and Stratton Inc. 8½″ × 5½″, pp. 308. Price: $4.50.

"Doctors, Drugs and Steel", by Edward Podolsky, M.D.; 1946. New York: The Beechhurst Press. Sydney: Angus and Robertson Limited. 9″ × 5¾″, pp. 384, with illustrations. Price: 26s. 3d.

"Handbook of Infectious Diseases, with Notes on Prophylaxis, Serum Treatment and Vaccination", by the Staff of the Cantacuzène Institute under the direction of Professor C. Ionescu-Mihaesti and Professor M. Ciuca; 1945. Geneva: League of Nations. Sydney: H. A. Goddard Proprietary Limited. 6″ × 4¼″, pp. 331. Price: 6s. 3d.

Medical Appointments.

Dr. K. H. Grieve has been appointed Assistant Director, Pathological Laboratories, and Medical Officer, Department of Public Health, New South Wales.

Dr. J. H. Crawford, junior, has been appointed Government Medical Officer at Pomona, Queensland.

Dr. Philip Stretton has been appointed certifying medical officer for the Municipality of Queenstown, Tasmania, under the provisions of the *Workers' (Occupational Diseases) Relief Fund Act*.

Dr. Lindsay Dey has been appointed President of the Royal Alexandra Hospital for Children, Camperdown, New South Wales.

Dr. Philip Nolan has been appointed Medical Officer of Health to the Brighton Municipality, Tasmania.

Dr. John Fulton, of Launceston, Tasmania, has been appointed Certifying Medical Officer for the purposes of making the medical examination of nurses under Section 35C of the *Workers' (Occupational Diseases) Relief Fund Act*, 1939.

Diary for the Month.

June 25.—New South Wales Branch, B.M.A.: Ethics Committee.
June 26.—Victorian Branch, B.M.A.: Council Meeting.
June 27.—South Australian Branch, B.M.A.: Scientific Meeting.
June 27.—South Australian Branch, B.M.A.: Council Meeting.
June 27.—New South Wales Branch, B.M.A.: Branch Meeting.
June 28.—Queensland Branch, B.M.A.: Council Meeting.
July 2.—New South Wales Branch, B.M.A.: Council Quarterly.
July 3.—Victorian Branch, B.M.A.: Branch.
July 3.—Western Australian Branch, B.M.A.: Council Meeting.
July 5.—Queensland Branch, B.M.A.: Branch Meeting.
July 9.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
July 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
July 9.—New South Wales Branch, B.M.A.: Organization and Science Committee.
July 11.—South Australian Branch, B.M.A.: Council Meeting.
July 12.—Queensland Branch, B.M.A.: Council Meeting.
July 16.—New South Wales Branch, B.M.A.: Medical Politics Committee.
July 17.—Western Australian Branch, B.M.A.: General Meeting.
July 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
July 18.—Victorian Branch, B.M.A.: Executive Meeting.
July 23.—New South Wales Branch, B.M.A.: Ethics Committee.
July 24.—Victorian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.

ATHERTON HOSPITALS BOARD. — Applications are called for the position of Medical Superintendent, Herberton Hospital. Salary £600 minimum, £750 maximum, with the right of private practice, except within the hospital, with basic wage increase £32 and northern allowance £48 added and with £2 2s. per week accommodation allowance until such time as accommodation at the hospital can be provided. The Medical Superintendent to visit Ravenshoe fortnightly and Mount Garnet monthly, or as required by the Board for attendance on public patients. Mileage at the rate of 1s. per mile to be allowed provided that the Medical Superintendent provides his own vehicle. The successful applicant will be provided with free air travel to Cairns and will be required to enter into an agreement to serve a minimum of twelve months. The successful applicant to take up duties on the 1st August. Applications close with the Secretary on the 10th July, 1946.—W. H. SHERRIN, Secretary, Atherton Hospitals Board.

CHILDREN'S HOSPITAL, CARLTON.—The committee invites applications from duly qualified medical practitioners for two positions as Honorary Clinical Assistants to Honorary Orthopædic Surgeons to the hospital. Applications must be submitted on forms obtainable from the undersigned, and close on Saturday, June 29, 1946. By order.—H. BARRETT, Manager and Secretary, Carlton, N.3, Victoria, June 14, 1946.

FULL- OR PART-TIME DAY WORK required by medical practitioner (female) in Sydney metropolitan area. Particulars to "M.B.", c.o. this journal.

BRITISH MEDICAL ASSOCIATION

New South Wales Branch

Assistant Medical Secretary

APPLICATIONS are invited for the position of ASSISTANT MEDICAL SECRETARY of the New South Wales Branch of the British Medical Association.

The position is a whole-time one. The holder will be an official of the Branch and will be required to act as Assistant to the Medical Secretary.

Applicants, who should possess organizing and administrative capabilities, must be legally qualified medical practitioners and members of the British Medical Association and preferably should have some years' experience of practice.

Conditions of Service.—Salary range £1,250 to £1,400 *per annum* (annual increments £50); in addition provision for superannuation and three weeks' leave *per annum*.

Applications, with full particulars of qualifications, experience, age, etc., should be addressed to the President, New South Wales Branch, British Medical Association, 135, Macquarie Street, Sydney, to arrive not later than August 9, 1946.

EX-SERVICE GRADUATE (Honours, 1942) requires assistantship city or country. Sound experience especially in surgery and obstetrics. Reply No. 44, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer St., Glebe, Sydney, N.S.W.

ISLAND OF NAURU: VACANCY FOR GOVERNMENT MEDICAL OFFICER.—Applications are invited from persons desirous of appointment as Government Medical Officer, Nauru. Salary £800, advancing by annual increments of £50 to £1,000 per annum. (The Commonwealth Income Tax Assessment Act does not apply to income derived by a resident of the island from sources within the island.) Appointment will be for a period of two years in the first instance and will be subject to the passing of a medical examination as to fitness for service in the tropics. Applications, accompanied by copies only of testimonials, setting out particulars of age, qualifications and experience and stating whether married or single, should reach the Secretary, Department of External Territories, Canberra, not later than 29th June, 1946.

FOR SALE, very smart folding examination couch-mattress, newly upholstered white leather. £15 or offer. B 2485 (Sydney).

THE DEPARTMENT OF PUBLIC HEALTH, WESTERN AUSTRALIA.—Applications are invited for the position of Resident Medical Officer, District Hospital, Kalgoorlie. Successful applicant will be required to carry out the duties of District Medical Officer, which entails treatment of indigents and such other duties as may be prescribed. Salary £450 per annum, plus quarters and board. Applicants should have had at least one year's hospital experience. Fare to Kalgoorlie paid if applicant remains in position for one year. Applications close on June 30 and should be addressed to the Principal Medical Officer, Department of Public Health, 57 Murray Street, Perth, Western Australia.

YOUNG EX-SERVICE DOCTOR, married, has own residence, Randwick, New South Wales, would welcome assistancy or partnership metropolitan area. FX7016 or Box No. 41, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer St., Glebe, Sydney, N.S.W.

EXPERIENCED stenographer and receptionist seeks position doctor's rooms. Reply to "J", Box 796, G.P.O., Sydney.

STORER-HARRISON X-RAY COMPANY

FOR EVERYTHING ELECTRICAL IN MEDICINE

- Ediswan Electric Convulsion Therapy Apparatus.
- Infra-Red Generators.
- Ultra-Violet Lamps.
- Short-Wave Diathermy.
- Surgical Diathermy.
- Faradic/Galvanic Apparatus.
- X-Ray Apparatus.
- X-Ray Accessories.
- Equipment Hire Service.

Further Particulars:

STORER-HARRISON X-RAY COMPANY

67 Hunter Street, Sydney
BW 5122 BW 7277

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

SALES AND PURCHASE of Medical Practices negotiated.

SPECIAL CONSIDERATION AND ADVICE provided for ex-service Medical Officers.

LOCUM TENENS AND ASSISTANTSHIPS arranged.

FULL DETAILS ON APPLICATION **MANAGER: G. FEELY**

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: WM 3847.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

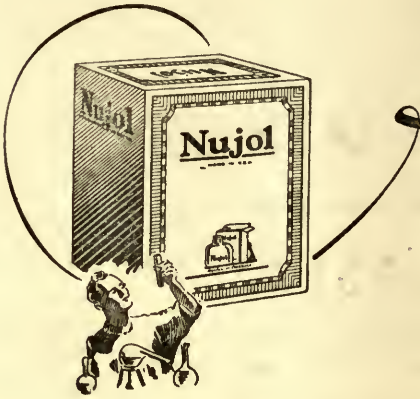
Financial Assistance

available in approved cases to facilitate transfers.

Telephones B 4159
XA 2644 (After Hours)

Telegrams: "Locumtens Sydney".

C. R. STRANGE,
Manager and Secretary.

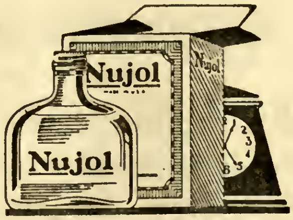


Sealed FOR COMPLETE PROTECTION

Nujol comes to you in hygienically sealed cartons to assure greater freedom from the risk of exterior contamination. Constant laboratory tests preserve that uniform quality and viscosity acknowledged by medical men throughout the world, and in accord with the exacting requirements of the British Pharmacopœia.

Nujol is most efficacious in aiding intestinal lubrication therapy, and the rigid standard of purity, which never varies, makes Nujol a most dependable and consistent liquid paraffin for the treatment of constipation.

Nujol



"Regular as Clockwork."

STANCO (AUST.) PTY. LTD.
15 Grosvenor Street - - - - - Sydney

6.6

THE NEW SYNTHETIC ANTISPASMODIC

TRASENTIN

Tablets of 0·075 grm. (1⅛ gr.)
in bottles of 20.
Ampoules 1·5 c.c. = 0·075 (1⅛ gr.)
in boxes of 5 and 20.

"TRASENTIN" "CIBA" exhibits an antispasmodic action similar to that of atropine—but without the unpleasant side-effects of the latter drug on the heart (acceleration of the pulse, palpitation, etc.), on the pupil (mydriasis), on the accommodation (visual disturbances), and on the salivary glands (dryness in the throat, thirst and even dysphagia). It is not a simple substitute for atropine but possesses the advantage of acting in marked degree also on smooth muscle tissue, like papaverine. "TRASENTIN" "CIBA" is well tolerated.

INDICATIONS

Medicine—Spasms of the gastro-intestinal system, e.g., ulcus ventriculi et duodeni, spastic constipation, spasms of the pylorus and cardia, secondary spasms resulting from organic gastro-intestinal affections, spasms of the urinary passages in cases of inflammation and lithiasis, spasms of the biliary ducts and biliary colic.

Surgery—Gynæcology and Obstetrics—
Spasms of the genito-urinary system, vesical tenesmus, dysmenorrhœic spasms, and spasms of the organs of the abdominal cavity.

NEURO-TRASENTIN

Tablets 0·02 grm. in bottles of 30.

Because of the synergism of the sedative and antispasmodic effect of its components, "NEURO-TRASENTIN" "CIBA" is an effective medicament for the treatment of neurovegetative and psychic states of agitation—although it does not have a hypnotic effect when given in small repeated doses.

Extensive clinical experiences show that "NEURO-TRASENTIN" "CIBA" is of value in the following indications:

Vegetative dystonia. Cardiac and vascular nervous disturbances, Circulatory instability—particularly during menopause. Disturbances of the peripheral circulation, intermittent claudication. Disturbances in hypertonia, vertigo, cerebral sclerosis. Stenocardia, etc., etc.

Stocks are held by all leading Pharmacists throughout the Commonwealth.
Literature and further information is obtainable from the direct Representative:
J. Moir Harkness, Box 271, G.P.O.

CIBA LIMITED
SWITZERLAND

NEW BOOKS ★ **J. & A. CHURCHILL LTD.** ★ NEW ISSUES

PHYSICAL CHEMISTRY OF CELLS AND TISSUES
By R. HÖBER, M.D., Department of Physiology, University of Pennsylvania, and Collaborators. 70 Illustrations. 42s.

MEN UNDER STRESS: In and After Combat
By Lieut.-Col. R. R. GRINKER, U.S. Army Air Forces Medical Corps, and Major J. P. SPIEGEL, U.S. Army Air Forces Medical Corps. 25s.

MICROANALYSIS IN MEDICAL BIOCHEMISTRY
By E. J. KING, M.A., Ph.D. 16 Illustrations. 10s. 6d.

PATIENTS AND APPENDICITIS
By SIR CRISP ENGLISH, *K.C.M.G.*, F.R.C.S. 5 Illustrations. About 10s. 6d.

A POCKET OBSTETRICS
By A. C. H. BELL, M.B., F.R.C.S. 12 Illustrations. 7s. 6d.

TEXTBOOK OF PHARMACOGNOSY: Structural and General
By T. E. WALLIS, D.Sc., F.R.I.C., Ph.C. 213 Illustrations. 28s.

MEDICAL EMERGENCIES
By C. NEWMAN, M.D., F.R.C.P. *Third Edition.* 10s. 6d.

DISORDERS OF THE BLOOD: Diagnosis, Pathology, Treatment and Technique
By SIR LIONEL WHITBY, *C.V.O.*, *M.C.*, M.D., F.R.C.P., D.P.H., and C. J. C. BRITTON, M.D., D.P.H. *Fifth Edition.* 16 Plates (12 Coloured) and 70 Text-figures. 30s.

THE CHEMICAL ANALYSIS OF FOODS
By H. E. COX, Ph.D., D.Sc., F.R.I.C. *Third Edition.* 40 Illustrations. 24s.

A POCKET SURGERY
By P. H. MITCHINER, *C.B.*, *C.B.E.*, M.D., M.S., and A. H. WHYTE, *D.S.O.*, M.S. *Second Edition.* 8s. 6d.

A COURSE IN PRACTICAL BIOCHEMISTRY
By A. T. CAMERON, D.Sc., F.R.I.C., F.R.S.C., and F. D. WHITE, Ph.D., F.R.I.C. *Fifth Edition.* 4 Plates and 23 Text-figures 12s. 6d.

SURGICAL NURSING AND AFTER-TREATMENT
By H. C. RUTHERFORD DARLING, M.D., M.S., F.R.C.S. *Ninth Edition.* 211 Illustrations. 12s. 6d.

TROPICAL MEDICINE
By SIR LEONARD ROGERS, *K.C.S.I.*, *C.I.E.*, M.D., F.R.C.P., F.R.C.S., F.R.S., and SIR JOHN W. D. MEGAW, *K.C.I.E.*, M.B. *Fifth Edition, reprinted.* 2 Coloured Plates and 87 Text-figures. 21s.

BIOCHEMISTRY FOR MEDICAL STUDENTS
By W. V. THORPE, M.A., Ph.D. *Third Edition, reprinted.* 39 Illustrations. 16s.

ELEMENTARY ANATOMY AND PHYSIOLOGY
By J. WHILLIS, M.D., M.S., F.R.C.S. *Second Edition, reprinted.* 93 Illustrations. 15s.

SYNOPSIS OF REGIONAL ANATOMY
By T. B. JOHNSTON, M.D. *Fifth Edition.* 17 Illustrations. 16s.

104 GLOUCESTER PLACE, LONDON, W.1

Make the most of Sleep . . .

Enjoy the deep refreshing sleep that follows a steaming cup of Cadbury's Bourn-vita at supper-time and you will awaken refreshed, and full of energy. Bourn-vita induces the really sound sleep that is so essential to convalescents. The calcium and phosphorus it contains are valuable to the nerves, and being a combination of eggs, full-cream milk and chocolate, Bourn-vita is easily digested and very nourishing.

Cadbury's
BOURN-VITA
for deep refreshing sleep

YOUR PATIENT

When you have prescribed send your patient to us and KNOW your prescription will be dispensed accurately. Our triple-checking system, to which every completed prescription is subjected, is a guarantee of precise dispensing.

Co-operate, and use the services of

WASHINGTON H. SOUL PATTINSON & CO. LTD.

City, Suburbs and Newcastle

Medical Practices, etc.

Unopposed practice, western district. Average cash taking £2,200. Comfortable home to rent. Price £1,700. Terms. Reduced price for cash.

2. Southern city. Cash take average over 6 years £3,300. Residence to rent. Goodwill £3,000. Terms.

Wanted.

Doctor experienced in ophthalmology wishes to obtain position as assistant ophthalmic surgeon.

All Enquiries Confidential.

GOYDER, SON & CO.,

Medical Agents,

Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.

After Hours: XA 1749.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)

NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.

Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary,

MISS E. P. EVANS,

Manchester Unity Building,
185 Elizabeth Street, Sydney.
(MA 2031.)

ROYAL SOCIETY OF MEDICINE: THE NICHOLS FELLOWSHIP. — Applications are invited for the above Fellowship, the emoluments of which are at the rate of £200 per annum and £25 for expenses. The research is to relate to the ætiology, pathology, prevention or treatment of puerperal infection. The applicants should give a précis of the proposed scope of the research and where it is to be carried out. In the first instance the Fellowship shall be awarded for one year and may be continued for a second year after consideration of a report of the work already done. Applications should reach the Secretary, Royal Society of Medicine, 1, Wimpole Street, London, W.1, not later than 30th September, 1946.

CHARLEVILLE HOSPITALS BOARD, QUEENSLAND.—Applications are invited from persons qualified to fill the position of Medical Officer at the Augathella Hospital, Queensland. Salary £700 per annum, with the right of private practice. Partly furnished residence, with water and electric light provided. Successful applicant required to dispense. Applicant to state age, qualifications, etc., with testimonials, and to state the earliest date of acceptance if appointed. Appointment may be terminated by two months' notice on either side.—WM. M. CONNOLLY, Secretary.

ROCKHAMPTON HOSPITALS BOARD: MEDICAL SUPERINTENDENT, WESTWOOD SANATORIUM.—Applications are invited for appointment to the position of Medical Superintendent, Westwood Sanatorium. *Salary and Conditions of Appointment.*—Annual Salary: Minimum £750, maximum £1,000, plus furnished quarters, fuel, light and milk. Salary to be subject to basic wage adjustment which is at present an addition of £32 per annum. The salary of the appointee will be determined within the above range, having regard to his qualifications and experience. Private Practice: A limited amount of private practice will be allowed within the district between Stanwell and Duaringa, subject always to the requirements of the sanatorium taking precedence and that patients suitable for treatment at the clinic or sanatorium be not treated privately. Recreation Leave: Six weeks after each period of twelve months' service. Sick Leave: One week on full pay and one week on half-pay for each year of service — the maximum period granted at any one time not to exceed equivalent of 39 weeks on full pay. The Board is willing to consider an arrangement whereby a suitable medical officer wishing to specialize in the treatment of tubercular patients will take up residence at another sanatorium for a period up to two months on pay to obtain experience and in return to undertake to give twelve months' service at the Westwood Sanatorium. Westwood Sanatorium has a capacity of 100 beds and is situated thirty miles from Rockhampton on the main central railway line. Transport to the clinic to be established at the Rockhampton Hospital and on other official business will be provided by the Board. Further particulars will be forwarded on request. Applications close at 12 noon on 5th July and should be addressed to the Manager, Rockhampton Hospitals Board, Box 138, P.O., Rockhampton, with envelope endorsed "Medical Superintendent, Westwood Sanatorium".

QUEENSLAND INSTITUTE OF MEDICAL RESEARCH, BRISBANE.—Applications are invited for the position of Parasitologist for the institute. The appointee will devote his time to research in parasitology. Tenure of appointment will be for five years, subject to good conduct and efficient service. Salary classification: minimum £850, maximum £1,100 per annum, plus basic wage adjustment (at present £32 per annum). While possession of a medical degree is an advantage, it is not essential to the position. Appointee will be subject to the Public Service Acts and Public Service Superannuation Acts unless exempted therefrom upon his own application. Applicants should state their full name, date and place of birth, marital status, qualifications and dates thereof, academic honours and post-graduate work, past appointments with dates, published works (including papers), and length, locality and nature of service with the fighting forces. Not more than six testimonials may accompany any application. Applications close on 9th July, 1946, with Secretary, Council of Queensland Institute of Medical Research, Box 917M, G.P.O., Brisbane, from whom intending applicants may obtain further information.

SURGICAL DIATHERMY, portable, good order. Price £30. Write 151 Marshall Street, Ivanhoe, Victoria, or ring **JX 1619.**

STATE PUBLIC SERVICE, QUEENSLAND.—Applications are invited from qualified medical practitioners for appointment as Medical Officer, Brisbane Mental Hospital, Goodna. Classification: minimum £675, maximum £875, subject to basic wage adjustment, which at present is an addition of £32 per annum. Free quarters, light, fuel, milk and garden produce will be supplied to appointees. Salary in excess of the minimum will be payable if a successful applicant's qualifications and experience warrant such increased payment. Applications should contain full name, age, and particulars as to date of graduation, results obtained, other qualifications and experience. Returned servicemen should furnish, on the prescribed form obtainable from the undersigned, full particulars regarding war service. Applications, with copies of testimonials, should be forwarded to the Secretary, State Public Service Commissioner's Department, Box 488H, G.P.O., Brisbane, before Friday, 12th July, 1946.—D. W. FRASER, Secretary.

RECEPTIONIST, ex-WAAAF, available for doctor's rooms. Able type. Three years' pre-war nursing experience. Can supply references.—MISS HENDERSON, 34, Mona Road, Darling Point.

HALLAM

PTY. LTD.

Pharmaceutical Chemists

(Est. 1882)

HALLAMS have specialised in the Dispensing of Prescriptions for over 60 years

•

Agents in New South Wales for all products of

Evans Medical Supplies Ltd., London

•

PHARMACIES NEAR MACQUARIE STREET:

168 King Street, Queen's Sq.
136 King Street (near Castlereagh Street).
Corner Phillip and Bent Sts.
Corner Hunter and Elizabeth Streets.

Head Office:

312 GEORGE STREET
(opposite Wynyard Station)

12 Branches in SYDNEY and SUBURBS

Service for Doctors

WATSON VICTOR
LIMITED

Branches in all Capital Cities of Australia and New Zealand.

No. 574.—N.S.W. country opposed practice taking over £2,000. Lodges £200, mids. 70, general and private hospitals. Modern residence, rent £2 10s. weekly. Goodwill £1,400.

No. 581.—Sydney suburban practice taking £3,000. Half-share available young ex-service practitioner. Purchaser will need find suitable residence.

No. 589.—N.S.W. country unopposed coastal practice taking over £1,500. Few lodges, mids. 50, district hospital. Modern residence and goodwill for sale. Terms available.

No. 592.—Sydney suburban practice taking £3,300. Mids. 40, lodges 400. Modern brick residence to let, vacant possession. Price goodwill £3,000.

No. 601.—N.S.W. base hospital town taking over £2,500. Mids. 60, lodges. Modern brick cottage, £4 week, vacant possession. Price goodwill £2,000. Terms available.

Locum tenens. Reliable experienced practitioners available at short notice.

Particulars in Confidence.

WATSON VICTOR
LIMITED

LICENSED BUSINESS AGENTS

Watson House, Bligh Street, Sydney.

Telephone: BW 4433.

ASSISTANT GOVERNMENT MEDICAL OFFICER, CLASS "A", PROFESSIONAL DIVISION, DEPARTMENT OF HEALTH, VICTORIA. — Applications, addressed to the Secretary to the Public Service Board, Public Offices, Treasury Place, Melbourne, C.2, and accompanied by evidence of experience and qualifications and a statement of date and place of birth, are invited for the abovementioned position up to Saturday, 6th July, 1946. *Yearly Salary:* £722, minimum; £800, maximum; plus cost of living adjustment (£30 at present). *Duties:* To assist the Government Medical Officer, to act as Medical Officer at His Majesty's Gaol, Pentridge, to assist in the special investigation of certain prisoners, and to furnish reports thereon for the guidance of the courts and Crown Law Department. *Qualifications:* To be a legally qualified male medical practitioner registered in Victoria, with a good general knowledge in the practice of medicine. A knowledge of and experience in mental diseases are also desirable.

CHILDREN'S HOSPITAL, CARLTON.—The committee invites applications, with testimonials, from legally qualified medical practitioners for the position of Medical Superintendent of the Orthopædic Section of the hospital at Frankston. Appointment in first place is for a period of two years. Commencing salary £1,000 per annum plus board and residence. Full particulars of duties are obtainable from the undersigned, with whom applications close on Saturday, July 13, 1946. By order.—H. BARRETT, Manager and Secretary, Carlton, N.3, Victoria, June 14, 1946.

Chamber
of
Horrors

● Haunted by fears more imaginary than real, the nervous, easily disquieted patient needs *efficient sedation* if he is to be properly prepared for surgery. Even more important is the requirement that sedation be accomplished with clinical safety. Nembutal meets both requirements—and meets them well! Nembutal is *efficient* because the dosage required for effect is only about half that required with most barbiturates. The marked *clinical safety* of Nembutal is in part due to the brief action of the drug which permits rapid recovery; partly, it is due to the small dosage which greatly reduces the amount of drug to be eliminated. How well Nembutal meets these requirements *in practice* is a matter of clinical record in hundreds of medical journals . . . a record which, examined, virtually eliminates uncertainty in the use of the drug in a wide variety of conditions.

ABBOTT LABORATORIES (Australia) PTY. LIMITED
Box No. 3698 G.P.O. Sydney

Nembutal
REG TRADE MARK

(SODIUM ETHYL (1-METHYL-BUTYL) BARBITURATE, ABBOTT)

Wholly set up, printed and publi t the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by ARTHUR FREDERICK ROOTS SIMPSON, of Fairholm Street, St ld, New South Wales, on behalf of the AUSTRALASIAN MEDICAL PUBLISHING COMPANY ITED, Seamer Street, Glebe, Sydney, New South Wales.

Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

915 Detection E. h. cysts (Marsden, Smith) Statistical

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, JUNE 29, 1946. No. 26.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

PENICILLIN

(THE CALCIUM SALT OF PENICILLIN)

1 ampoule containing 100,000 Oxford units, 10/6.

This quantity is sufficient for a series of parenteral doses.
(Available also in boxes holding 5 ampoules.)

1 ampoule containing 15,000 Oxford units, 5/6

This quantity is intended for a single parenteral dose.
(Available also in boxes holding 6 ampoules.)

1 ampoule containing 5,000 Oxford units 4/6

This quantity is intended primarily for dilution and local application, but may be used for parenteral injection if desired. (Available also in boxes holding 6 ampoules.)

PENICILLIN-SULPHANILAMIDE POWDER

FOR LOCAL APPLICATION. NOT FOR HYPODERMIC INJECTION.

1 bottle containing 10 grammes, 14/6.

Set of 6 bottles each containing 10 grammes, 84/-.

Each gramme contains 5,000 Oxford Units of the Calcium Salt of Penicillin mixed with powdered Sulphanilamide.

To obtain supplies of Penicillin-Sulphanilamide-Powder a Medical Practitioner must apply in the form of certificate set out in the Penicillin order published in the *Commonwealth of Australia Gazette*, No. 189, of 20th September, 1944, and in THE MEDICAL JOURNAL OF AUSTRALIA of 30th September, 1944. Such application must be made to the Senior Commonwealth Medical Officer in the State concerned.

THE SIGNATURE OF A COLLEAGUE IS NOT REQUIRED.

The addresses of the Senior Commonwealth Medical Officers are: NEW SOUTH WALES, Customs House, Circular Quay, Sydney; VICTORIA, A.C.A. Building, 118 Queen Street, Melbourne; SOUTH AUSTRALIA, C.M.L. Building, 41-47 King William Street, Adelaide; WESTERN AUSTRALIA, 4th Floor, G.P.O., Perth; TASMANIA, Commonwealth Health Laboratory, Launceston; QUEENSLAND, Anzac Square, Adelaide Street, Brisbane.

COMMONWEALTH SERUM LABORATORIES

PARKVILLE, N.2, VICTORIA, AUSTRALIA

★ BAILLIÈRE BOOKS ★

A Second Edition of *Just Published*

NICHOLL'S Tropical Nutrition and Dietetics

A greatly enlarged edition incorporating much recent knowledge in the constituents of foodstuffs. Includes new chapters on diets suitable for hospitals, prisons and other institutions; public health activities in relation to nutrition; details of foodstuffs peculiar to warm climates; food poisoning and insect pests of grain foods. There are many tables comparing the Vitamin Content of almost all food-products likely to be found in tropical countries.

Pp. xii + 384. 27s. 6d. 32 Illustrations and 11 Plates.

GUTHRIE-SMITH'S Rehabilitation, Re-education and Remedial Exercises
Pp. 424. 273 Illus.

"Deserves to be read by every surgeon and physician."—*British Medical Journal.* 25s.

CABOT'S Physical Diagnosis
13th Ed. Pp. 888. 398 Illus.

". . . Intensely practical, a book of individuality."—*Journal of Laboratory and Clinical Medicine.* 27s. 6d.

MACKENNA'S Diseases of the Skin
4th Ed. Pp. 557. 46 coloured plates. 168 Illus.

"A thoroughly sound and remarkably complete textbook."—*British Journal of Dermatology.* 25s.

BAILLIÈRE'S SYNTHETIC ANATOMY

Complete in 14 parts, each of 12 transparent plates printed in colours, showing successive layers from skin to bone. 3s. 6d. per part, postage 2d. 52s. 6d. the set, including case.

SOLOMON'S Gynæcology
4th Ed. Pp. 352. 250 Illus.

"The plain facts of all the gynæcology that need be known for finals or general practice."—*The Student.* 25s.

LAKE'S The Foot
3rd Ed. Pp. 432. 36 Illus.

"'Lake on the Foot' will soon come to be regarded as a standard work."—*British Medical Journal.* 15s.

Modern Treatment in General Practice Year Book, 1945
Edited by CECIL P. G. WAKELEY, *C.B.*, D.Sc., F.R.C.S.

A practical textbook of modern diagnostic and therapeutic methods. 15s.

ROSE & CARLESS' Manual of Surgery
17th Ed. Edited by C. P. G. WAKELEY, *C.B.*, D.Sc., F.R.C.S., and J. B. HUNTER, *M.C.*, F.R.C.S. Pp. 1768. 19 Col. Plates. 1,110 Illus.

"We have nothing but praise for this edition."—*British Medical Journal.* 35s.

BAILLIÈRE, TINDALL & COX, 7-9 Henrietta Street, London, W.C.2

Vitamins A, B1 and D with Iron

VIMALT
VIMALT
PALATABLE
NUTRITIOUS
VITALIZING
RICH IN VITAMINS
F. H. FAULDING & CO LTD
VIMALT
VIMALT
PALATABLE
NUTRITIOUS
VITALIZING
RICH IN VITAMINS

VIMALT

DOSE

Child: Half to two teaspoonfuls three times a day.
Adult: One tablespoonful three times a day.

Each ounce contains:

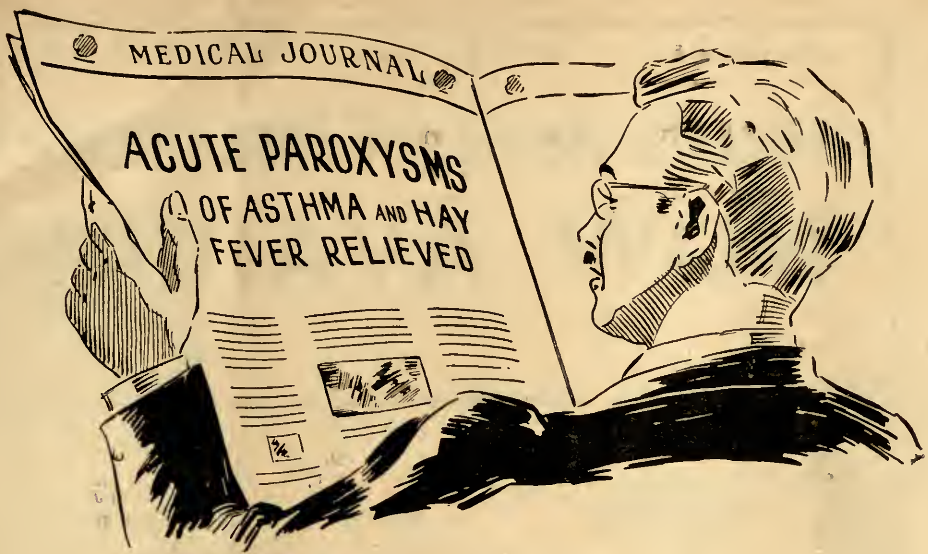
Vitamin A .. .. 5,000 International Units
Vitamin B1 . .. . 200 International Units
Vitamin D .. .. 500 International Units

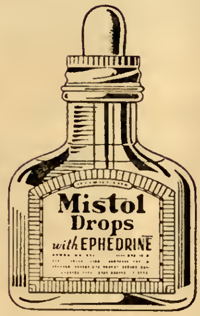
ORANGE - FLAVOURED NUTRITIVE TONIC

F. H. FAULDING & CO. LTD.

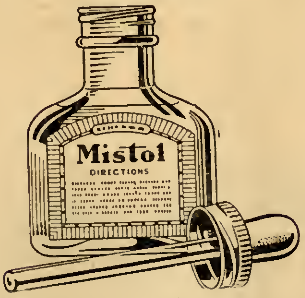
Manufacturing Chemists

ADELAIDE : PERTH : SYDNEY : MELBOURNE : BRISBANE


MEDICAL JOURNAL
ACUTE PAROXYSMS OF ASTHMA AND HAY FEVER RELIEVED



MISTOL with Ephedrine for severe cases.



MISTOL for milder conditions.

Where drops are indicated for the relief of Hay Fever, Asthma and the other nasal and respiratory conditions, Mistol preparations can be used with the fullest confidence. Formulated expressly for this purpose, Mistol contains menthol, camphor, eucalyptol and ephedrine in a base of liquid petrolatum of appropriate viscosity. It spreads a thin film over the membranes, shrinking the swollen tissues, and increasing resistance to further infection. Abnormal secretions diminish, and healthy, normal conditions are restored.

Mistol with Ephedrine is especially prepared for severe cases, but in milder cases of head colds and nasal congestion Mistol with chlorbutanol will be found an ideal astringent, with a soothing and healing effect.

We shall be glad to send you full size bottles of each product with our compliments to enable you to test the qualities of Mistol.

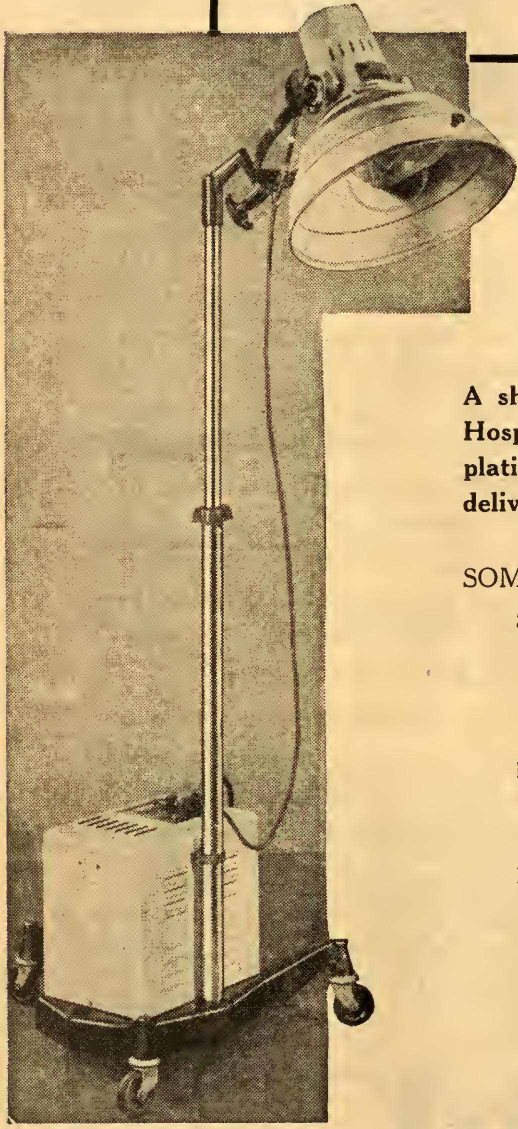
Mistol

REGISTERED TRADE MARK

STANCO (AUST.) PTY. LTD.
MANUFACTURERS OF MISTOL AND MISTOL WITH EPHEDRINE
15 Grosvenor Street, Sydney

3.6

SOLLUX Model VII INFRA-RED LAMPS
NOW AVAILABLE



The Sollux Model VII
Infra-red Lamp.

"In the relief of pain", writes Dr. Howard Humphris, "I think this form of treatment stands pre-eminent. . . ."

A shipment of the famous Sollux Infra-red Lamps is now here. Hospitals, Doctors and Physiotherapists who have been contemplating purchase may now order and be assured of immediate delivery.

SOME CLINICAL USES OF THE SOLLUX LAMPS:

SURGERY: In sprains and strains pain is quickly alleviated and function rapidly restored by prolonged irradiation ("one can undertake to cure an acute sprain and produce complete freedom of movement in 3 days"). The decongestive action is marked in contusions. Fractures and swellings near a joint are best treated with radiant heat.

EAR, NOSE AND THROAT: Indications include acute otitis, sinusitis, mastoiditis, laryngitis; boils in the ear and nose. Radiant heat produces active hyperæmia, relieves congestion, soothes pain, enhances local nutrition.

NERVOUS AND MUSCULAR CONDITIONS: For neuritis and neuralgic symptoms, sciatica, migraine, radiant heat is 'of the greatest value'. Myalgia and other rheumatic manifestations show good response. Valuable also in arthritis and osteo-arthritis.

WATSON VICTOR
LIMITED
AUSTRALIA NEW ZEALAND

HANOVIA LIMITED
SLOUGH - BUCKS - ENGLAND

Bligh St. .... Sydney
Collins St. .. Melbourne
Eagle St. .... Brisbane
Gresham St. .. Adelaide
St. George's Terrace ... . Perth
Watt St. .... Newcastle
The Terrace .... Wellington, N.Z.

COUPON

WATSON VICTOR LTD. ....Branch.

Please send me "Manual of Operative Technique and Indications for Infra-red Irradiation Therapy".

Name ....

Address..

I.R.546M. ....

HPL

PROTEIN DEFICIENCY—an interesting and helpful booklet

'PRONUTRIN'
CASEIN HYDROLYSATE
for
Oral Nitrogen Alimentation

We shall be pleased to send a copy on request.

The potential value of enzymic digests in the treatment of acute and chronic hypoproteinaemia is very much in the minds of medical men at the present time. Recent research work on the simple breakdown products of protein metabolism — the amino acids — has shown that they provide the best source of nitrogen in all conditions where the digestion of ordinary protein is impossible or is impaired. These simple " building units " of the protein molecule are rapidly absorbed by the alimentary tract. They stimulate tissue repair, relieve nutritional deficiency and oedema, and build up body reserves depleted by inadequate and enforced low diets. ' PRONUTRIN ' is prepared by the enzymic digestion of casein; a method that retains the essential amino acids of the protein and provides the nitrogen needs of the body in the form of a palatable water-soluble powder for oral administration.

'PRONUTRIN'

Trade Mark Brand

CASEIN HYDROLYSATE

For oral administration. Available in 1-lb. tins.

HERTS PHARMACEUTICALS LIMITED · WELWYN GARDEN CITY · HERTS · ENGLAND
Distributing Agents—Messrs. MARTIN & CO. (Surgical) LTD., corner of Hunter and Phillip Streets, SYDNEY

M5*

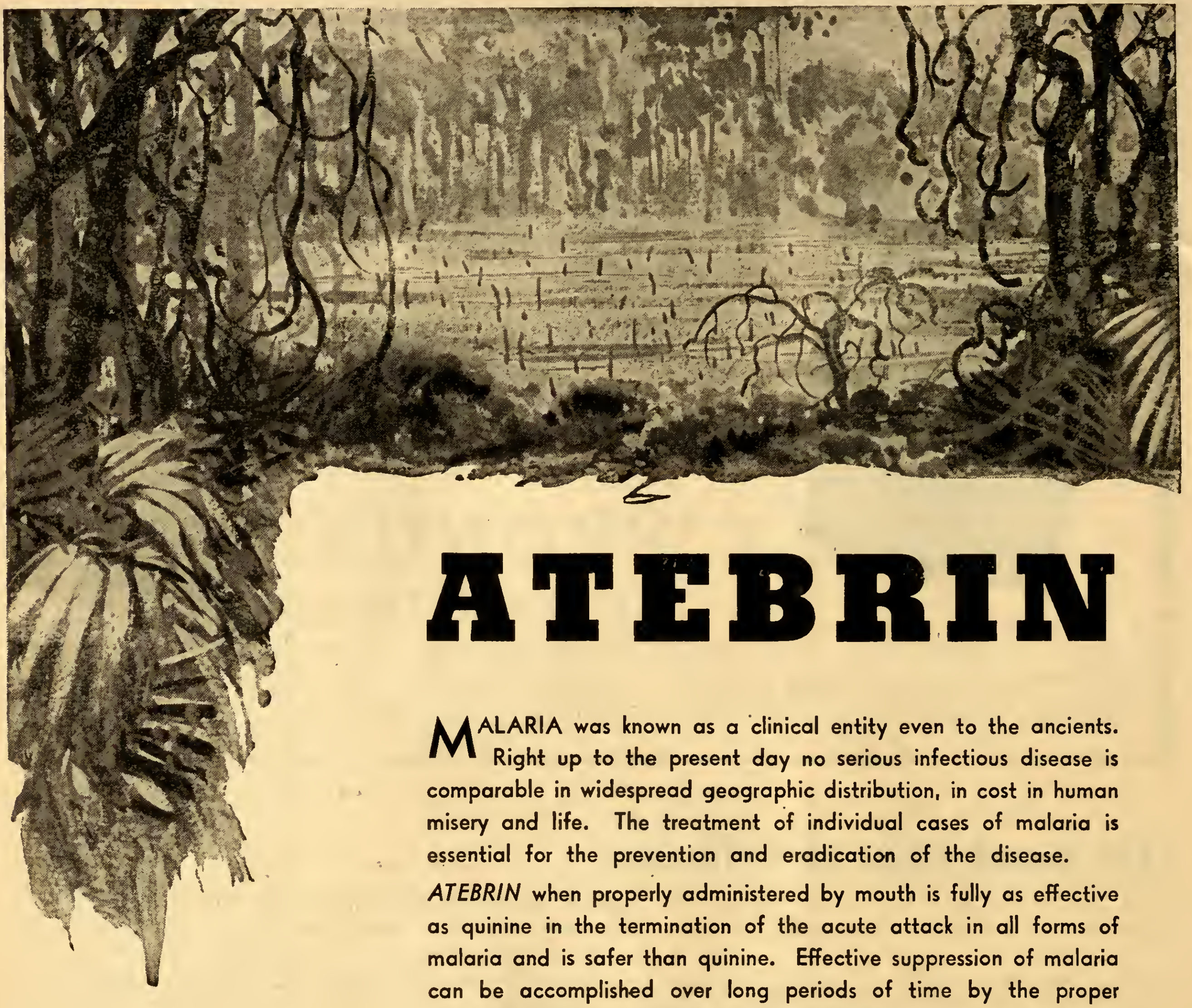
"The wound stripe of civilization"

★The increase in gastric ailments, a feature of recent years, has been accelerated by the subconscious emotional disturbances of war. Seeking a simple treatment of rest for the digestive system, doctors naturally turn to Benger's Food which for many, many years has been the means of forestalling serious gastro-intestinal trouble. Benger's Food, by virtue of its enzymic action, is literally the only "food" which sustains the patient without digestive strain and at the same time allows the doctor to vary the degree of pre-digestion in accordance with the power of assimilation and the need for regulated digestive exercise.

THE ENZYMIC ACTION OF BENGER'S FOOD
As a result of self-digestive action by natural pancreatic enzymes, the milk proteins are so modified that when prepared Benger's Food comes into contact with the gastric juices, it separates into fine flocculi, presenting a very large surface area to the gastric juice. This is in marked contrast to the characteristic curd of unmodified milk. By the time Benger's Food is sufficiently cool to drink, the self-digestion is carried as far as it need be for all cases where digestion is partially impaired.

BENGER'S LTD. (Inc. in England), 350 GEORGE ST.,
SYDNEY

B13/46



ATEBRIN

MALARIA was known as a clinical entity even to the ancients. Right up to the present day no serious infectious disease is comparable in widespread geographic distribution, in cost in human misery and life. The treatment of individual cases of malaria is essential for the prevention and eradication of the disease.

ATEBRIN when properly administered by mouth is fully as effective as quinine in the termination of the acute attack in all forms of malaria and is safer than quinine. Effective suppression of malaria can be accomplished over long periods of time by the proper use of *ATEBRIN*. Available evidence indicates that this end may be achieved without danger to the individual.

ATEBRIN is available in the following packings:

ATEBRIN TABLETS 0.1 g. ($1\frac{1}{2}$ grains) in tubes of 15.
in bottles of 100, 300 and 1000.
" " 0.05 g. ($\frac{3}{4}$ grain) in bottles of 20.

BAYER

BAYER PHARMA PTY. LTD.

56 Young Street, Sydney

DISTRIBUTORS: FASSETT & JOHNSON LTD., 36-40 CHALMERS STREET, SYDNEY

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, JUNE 29, 1946. No. 26.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.

Studies on Rh Iso-Immunization, by N. R. Henry and R. T. Simmons .. 897

The Results of Penicillin Therapy in the Treatment of Gonorrhœa, by Stefania W. Siedlecky 904

The Rehabilitation of War Neurotics, by C. M. McCarthy .. 910

The Rehabilitation of War Neurotics, by H. Hastings Willis .. 912

The Detection of the Cysts of Entamœba Histolytica in the Fæces by Microscopic Examination, by A. T. H. Marsden, M.D. .. 915

REVIEWS—

Progress in Neurology, Psychiatry and Endocrinology .. 919

A Year Book of General Medicine .. 920

Sex Hormones .. 920

LEADING ARTICLES—

The World Food Shortage .. 921

CURRENT COMMENT—

Lessons from Spinach .. 922

Medical Education and Medical Practice in Germany during the War .. 923

ABSTRACTS FROM MEDICAL LITERATURE—

Physiology .. 924

Biochemistry .. 925

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific .. 926

Notice .. 927

MEDICAL SOCIETIES— Page.

Melbourne Pædiatric Society .. 928

SPECIAL CORRESPONDENCE—

Canada Letter .. 929

CORRESPONDENCE—

Congenital Fibrocystic Disease of the Pancreas .. 929

Politics and the Medical Profession .. 929

The Placing of X-Ray Films in Envelopes .. 930

Malaria .. 930

Bacille Calmette Guérin .. 930

Blood Loss in Cæsarean Section .. 930

POST-GRADUATE WORK—

Courses in Obstetrics and Gynæcology at Brisbane 931

OBITUARY—

Redford John Wright-Smith .. 931

Eugen Hirschfeld .. 931

NOMINATIONS AND ELECTIONS .. 931

THE FEDERAL MEDICAL WAR RELIEF FUND .. 932

BOOKS RECEIVED .. 932

MEDICAL APPOINTMENTS .. 932

DIARY FOR THE MONTH .. 932

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 932

EDITORIAL NOTICES .. 932

STUDIES ON RH ISO-IMMUNIZATION.

By N. R. HENRY and R. T. SIMMONS,

From the Pathology Department, Brisbane General Hospital, Queensland, and the Commonwealth Serum Laboratories, Melbourne, Victoria.

THE reports on iso-immunization by the Rh factor both through pregnancy and through repeated blood transfusions have formed an ever-increasing part of medical literature in recent years. In 1936 several workers reported proved cases of transfusion reactions following transfusions of blood from individuals of the same A-B-O blood group. In 1939 Levine and Stetson⁽¹⁾ reported a reaction from a transfusion of homologous blood during the puerperium and suggested that the mother was immunized by the fœtus with the formation of atypical antibodies.

Soon afterwards, Landsteiner and Wiener⁽²⁾ discovered and named the Rh factor, the discovery being the result of planned and careful research; the interest of all blood workers became centred on this factor, and then, soon afterwards, on the new phenomenon of iso-immunization within the human species.

Wiener and Peters,⁽³⁾ in a study of cases of reactions following repeated transfusions of homologous blood, showed that the patients were Rh negative and that they formed atypical antibodies which had the same specificity as the Rh antibody. Iso-immunization in pregnancy due to the Rh antigen was successfully demonstrated by Levine, Katzin and Burnham,⁽⁴⁾ and was soon confirmed by many other workers. The published data thus proved that the Rh factor was iso-antigenic in a dual role, (i) by immunization by repeated blood transfusions, and (ii) by immunization by the fœtus in pregnancy.

The Rh Antisera and Rh Nomenclature.

It soon became evident, however, that all human Rh antiserum was not identical in its specificities, but showed individual variation.⁽⁵⁾ Knowledge and experience with Rh antiserum rapidly increased, and at this time another variety of Rh antiserum was found which gave approximately 70% of positive reactions (instead of the usual 85%) with the blood of white subjects.⁽⁶⁾ Later a third variety of Rh antiserum was found by Wiener and Sonn⁽⁷⁾ which gave approximately 30% of positive reactions with blood samples from American white individuals, and thus the whole conception of the possible Rh types in blood underwent a period of evolution. Various nomenclatures for the Rh system have been suggested, and the question of nomenclature is at the present time being considered by an international committee. The nomenclature used in this paper is that suggested by Wiener.⁽⁸⁾

The three types of Rh antiserum he designates as anti-Rh_0 (85%), which is the standard serum, anti-Rh' (70%) and anti-Rh'' (30%). By the use of these three types of serum the Rh type can be divided into no less than eight different subtypes. These types are determined by six allelic genes—namely, Rh_0, Rh', Rh'', Rh_1, Rh_2 and rh. Combinations of these genes give rise to eight different phenotypes, all of which have actually been demonstrated. These are Rh_0, Rh_1, Rh_2, $\mathrm{Rh}_1\mathrm{Rh}_2$, Rh', Rh'', $\mathrm{Rh}'\mathrm{Rh}''$ and Rh-negative. Type Rh_1 contains both Rh_0 and Rh' antigens, and so may be written Rh_0' or $\mathrm{Rh}^{0\prime}$. Similarly, type Rh_2 may be written Rh_0'' or $\mathrm{Rh}^{0\prime\prime}$.

Fisher (quoted by Race⁽¹⁰⁾), in England early in 1944, proposed another scheme of nomenclature for the Rh types and showed the relationships between the various types of Rh antiserum and the Rh genes. The brilliance of this theoretical scheme becomes obvious when it is realized that it postulated the presence and serological reactions of the two rare genes Rh_z and Rh_y, and that it postulated the presence of six types of Rh antiserum, of which four had been discovered at the time. The Rh_z gene has since been discovered(27) and found to conform in every detail to the expected scheme, whilst one other of the types of antiserum has since been discovered by Mourant,(26) and found to conform completely to Fisher's postulated scheme. Fisher denoted the three forms of allelomorphic antigens which make up each gene as C, c, D, d, and E, e, and the antibodies specific for these antigens were denoted by the analogous Greek letters. The following table (Table I), modified from Fisher, shows the completeness of the scheme.

Wiener,(14) in a recent paper dealing with the Hr blood factors, has suggested that the antibodies be known as anti-Hr′, anti-Hr″ and anti-Hr_0 in a manner similar to their corresponding Rh antiserum.

Recognition of the Rh Genotypes.

When it was thought that the sixth type of serum of the series had actually been discovered, Fisher(20) published the following concise statement concerning the recognition of the various Rh genotypes.

> With the complete set of six antibodies now apparently discovered, the recognition of rare genotypes will be immensely easier. All the homozygotes of the seven known allelomorphs can be distinguished unambiguously, and nine of the heterozygotes, namely (omitting h's), R_0r, R_0R_2, R_0R_1, R_2R'', R_2R_z, $R''r$, $R'r$, R_1R_z, R_1R'. Three pairs of heterozygotes are indistinguishable:
>
> R_0R'' R_0R' R_0R_z
> R_2r R_1r R_1R_2
>
> These leave little practical doubt, since in each case the genotype printed below is about 1,000 times more frequent than that above.
>
> Three more heterozygotes are capable of confusion only with a heterozygote involving R_y, which has not been discovered, and which is unquestionably very rare:
>
> R_yR_2 R_yR_1 R_yr
> R_zR'' R_zR' $R'R''$
>
> It is amongst these that R_y may be looked for.
>
> Finally a group of three known genotypes, and one involving R_y, should react positively with all six reagents. These with their approximate frequencies in the British population are shown below:
>
> | R_1R'' | R_2R' | R_zr | R_0R_y |
> |---|---|---|---|
> | 0·8% | 0·3% | 0·4% | very rare indeed |
>
> Thus it is only amongst these last that genotype recognition will have to rely on pedigree evidence. The interpretation of pedigree evidence also will now be greatly facilitated.

The Rh "Blocking" or "Incomplete" Antibody.

Wiener(9) has described a different type of Rh antibody which he called the "blocking" antibody. Race(10) described the same antibody and called it an "incomplete" antibody. This antibody is capable of combining with the specific antigen (red cells) without any visible sign of the reaction having occurred. It was found to combine with the antigen (test cells in saline solution), but was incapable of completing the second stage of the agglutination reaction *in vitro*—that is, agglutination. However, that a combination has occurred may be shown by adding to the cell-serum mixture a known potent anti-Rh_0 agglutinating serum suitably diluted.[1] Since the antigens of the cells have already entered into combination with (or been coated by) the blocking antibody, none will be available for the agglutinating antibody. Therefore no agglutination will take place, whereas normally the cells would be strongly agglutinated. To date these "blocking" or "incomplete" antibodies found by most workers have been of specificity anti-Rh_0, but Diamond and Denton(25) have recently reported two cases of blocking antibody of both anti-Rh_0 and anti-Rh′ specificity, and in another report(29) stated they had found blocking antibodies of specificity anti-Rh′, anti-Rh″ and anti-Hr, but these are rare.[2] By the use of the ordinary agglutinating reaction together with this blocking test, Rh antibodies can be demonstrated in about 92% of the cases of sensitization.(24)

The Conglutination Test for Rh "Blocking" Antibody.

A further test to detect Rh sensitization has recently been described by Wiener(13) and is known as the conglutination test; but there is some doubt whether this is a true conglutination reaction. This test is exceedingly simple and consists of testing the red cells suspended in compatible human serum (known to be free from non-specific effects) instead of in citrate or saline solution, and any dilutions of the test serum (for titre determinations) are also made with this normal homologous serum instead of saline solution. The conglutination test detects "blocking" as well as agglutinating antibodies and gives visible agglutination with both types. The test may be performed at room temperature or 37° C., and the strength of cell suspension used is 2%. Wiener has postulated that the visible agglutination given by "blocking" antibody is due to some colloid in the serum or plasma used for the cell suspension.

---

[1] The words "suitably diluted" cannot be too strongly emphasized. The serum should be used at such a dilution that it causes "+++", not "++++", agglutination of the test cells, because the use of potent anti-Rh_0 serum used undiluted does give agglutination in the presence of "blocking" antibody.

[2] Callender, Race and Paykoc, *British Medical Journal*, July 21, 1945, at page 83, also reported having found the "incomplete" form of the St antibody.

TABLE I.

Reactions of the Six Postulated Types of Antiserum with the Eight Rh Genes. (Modified after Fisher and Others.)[1]

Name of Serum.		Anti-C. Anti-Rh′.	Anti-c. Anti-Hr′. (Standard.) (= St.)	Anti-D. Anti-Rh_0. (Standard.)	Anti-d. Anti-Hr_0.	Anti-E. Anti-Rh″.	Anti-e. Anti-Hr″.
Antibody present		Γ	γ	Δ	δ	H	η
Percentage reactions with the blood of white individuals		70%	80%	85%	65%	30%	96%
The genes and their reactions.	Rh_z CDE ..	+	−	+	(−)	+	−
	Rh_1 CDe ..	+	−	+	(−)	−	+
	Rh_y CdE ..	(+)	(−)	(−)	(+)	(+)	(−)
	Rh′ Cde ..	+	−	−	(+)	−	+
	Rh_2 cDE ..	−	+	+	(−)	+	−
	Rh_0 cDe ..	−	+	+	(−)	−	+
	Rh″ cdE ..	−	+	−	(+)	+	−
	rh cde ..	−	+	−	(+)	−	+

[1] Neither the anti-d serum nor the Rh_y gene has yet been found. The predicted reactions are shown in parentheses.

The Open Slide Test for Rh Agglutinins.

The conglutination test is a modification of Diamond and Abelson's(23) rapid slide test for the detection of Rh agglutinins, or compatibility test. These authors first described this rapid and accurate slide test, which is so simple that it can be performed in the smallest laboratory, and which also detects "blocking" as well as agglutinating antibodies. The test consists of adding 0·2 millilitre of fresh oxalated blood of known Rh-positive and Rh-negative types to 0·1 millilitre amounts of the test serum on ordinary open slides. The mixture is rocked and slightly warmed. Visible agglutination usually appears within one minute and always within three minutes, while the Rh-negative cells act as controls. A thick suspension of blood in plasma is used containing 40% to 50% of cells. The authors postulated that the excessive number of red cells used in the test probably absorbed the "blocking" antibody and left the agglutinating antibody free to act. Wiener,(13) however, found that the reaction could be brought about by serum which contained "blocking" antibody without any agglutinating antibody, and also with much weaker cell suspensions, provided they were suspended in serum or plasma. The success of the test appeared, then, to depend on the avoidance of any crystalline solution in the mixture rather than on the concentration of cells. The disadvantages listed against Diamond and Abelson's open slide test are that the large area exposed on the slide is conducive to drying, that the high concentration of cells favours the formation of rouleaux (the addition of saline solution after agglutination has taken place breaks up the rouleaux), and that the thickness of the mixture makes microscopic examination of the cells difficult.

For finer work and titre determinations Wiener's conglutination test is preferable. By the use of these two tests antibodies have been demonstrated in practically 100% of cases in which Rh sensitization has occurred. These tests, however, are not successful with cells suspended in citrate or saline solution.

The Albumin Test for Rh "Blocking" Antibody.

Diamond and Denton,(25) in a later report, state that albumin, either human or bovine, is the most satisfactory suspension medium for the test cells, and that excellent results are obtained provided the final concentration of the albumin is kept above 13%. To this end they use 20% albumin (prepared from human or bovine crystalline albumin, presumably in saline solution) as the diluent. Albumin possesses the great advantage that it is free from non-specific effects. As in Wiener's conglutination test, the strength of the cell suspension used is 2%, and the test is carried out by the tube technique.

Diamond and Denton have suggested that the simple agglutinating antibodies appear early in the process of sensitization, and that the "blocking" type appears only as the result of more severe or prolonged sensitization. By titrations of a test serum they claimed to assess with some degree of accuracy the degree and period of sensitization.

One of us (R.T.S.), prior to the publication of the work on albumin by Diamond and Denton, had tested a number of fluids to determine their suitability as suspending media for cell suspensions; these fluids included isotonic starch, gelatin, pectin, globulin, fibrinogen and albumin. The most satisfactory medium found was 25% human albumin in buffered diluent, a product prepared for human injection by the Massachusetts Department of Public Health, Boston. A sample of 25% human albumin in saline solution prepared at the Commonwealth Serum Laboratories by Mr. Gordon Ada gave similar results. The tests were performed on slides with 5% cell suspensions, and also in tubes with 2% cells.

Antigenicity of the Rh Genes.

Wiener(11) has pointed out that the gene Rh_0 is the most antigenic by far of the Rh factors, Rh″ being the least antigenic and Rh′ occupying an intermediate position. The following quotation is from Wiener.(11)

> Therefore, it would be expected that if, for example, an Rh-negative woman bears a type Rh_1 fœtus and becomes sensitized to the Rh factor, her serum should either contain anti-Rh_0 alone, or anti-Rh_0 and anti-Rh′ together, but not anti-Rh′ alone. Actual observations fully satisfy these expectations; the cases where the maternal sera appeared to contain anti-Rh′ alone all proved actually to be examples of anti-Rh_0' sera with anti-Rh_0 "blocking" antibodies.

The purpose of this paper is to report the investigations carried out in the case described here, which bear out the foregoing observations. In addition, this case has certain features which afford us the opportunity of stressing, in particular, two warnings to those engaged in the practice of blood transfusion: (i) Patients likely to receive repeated blood transfusions should be Rh tested and, if found to be Rh-negative, should receive only Rh-negative blood. (ii) The use of donors who have been in a malarious area should be avoided whenever possible. This is of great importance in view of the fact that many of our potential donors for years to come will consist of subjects who have been in such areas.

Report of a Case.

Mrs. M.H., aged forty-nine years, was first admitted to the Brisbane General Hospital in 1932, complaining of severe epistaxes and with a history of secondary anæmia. Previously in North Queensland she had been treated for pernicious anæmia by liver extract injections without effect. She had had at the Brisbane General Hospital cauterization of her nasal septum without relief. An erythrocyte count on September 8, 1932, showed her blood to contain 3,150,000 erythrocytes per cubic millimetre; her hæmoglobin value was 35% and her colour index 0·6. On September 10, 1932, a transfusion of fifteen ounces of blood from an unknown (hypertensive) donor was attempted, but only four and a half ounces were introduced. On September 15, 1932, she was successfully given a transfusion of eighteen ounces of blood from a donor (L.H.), who has since left this country. The patient's nasal septum was recauterized, and she was discharged from hospital on October 10, 1932, with an erythrocyte count of 4,270,000 per cubic millimetre and a hæmoglobin value of 75%.

She was admitted to the Ipswich Hospital in 1939, and was given a transfusion of 300 millilitres of blood from her son (C.H.), apparently without any untoward effect.

She was again admitted to the Brisbane General Hospital on June 22, 1945, complaining of palpitation, breathlessness, and a tightness and pain in the chest on the slightest exertion. She had been investigated privately and a diagnosis of hereditary hæmorrhagic telangiectasia had been made. On her fingers multiple telangiectases were present, and examination of the tongue revealed more telangiectases. The patient had suffered from chronic epistaxes. The erythrocytes numbered 2,940,000 per cubic millimetre, and her hæmoglobin value was 40%. Occult blood was present in the fæces.

In view of her anæmia, on June 23 a blood transfusion was given into the left saphenous vein. Her veins were extremely thready and deep, and venepuncture was difficult. For this transfusion her son (C.H.) and his friend (A.W.) were chosen after the cross-matching tests by the ordinary open slide method had proved them satisfactory. Both donors were servicemen. Five hundred millilitres of blood were removed from each donor, and the transfusion was commenced at 2.15 p.m. from donor C.H. At 7 p.m. during the course of transfusion of the second 500 millilitres of blood, the rate was slowed because the patient's pulse rate was steadily rising. At 8 p.m. the transfusion was stopped, as the pulse rate was still rising and the patient was "feeling dreadful". She had received 600 millilitres of blood in all. Her urinary output was maintained, however, and on June 25 she was feeling better. Her hæmoglobin value on this date was only 44%. On this date also her leucocyte count was 20,000 per cubic millimetre.

By June 28 she was complaining of headache and pains in the back and shoulders. She felt cold and shivering, and had photophobia. When the patient was questioned it was found that the second donor used on June 23 (A.W.) had had a malarial attack a few hours after he had donated the blood. Moreover, he had had other attacks previously. A blood film from the patient showed the presence of numerous *Plasmodium vivax* (benign tertian) parasites. Antimalarial therapy was instituted. The patient at this time was passing bloody stools. Because of this and because of her low hæmoglobin value (30%), on July 3 a further blood transfusion was arranged. The reaction to the previous transfusion not having been reported to the pathology department at the hospital, the ordinary open slide method was again used for this cross-matching test. Blood from the blood bank (donor O.O.) was used for this transfusion after cross-matching tests had given satisfactory results. The transfusion of 500 millilitres of blood was commenced at 5·30 p.m. The patient's condition deteriorated, and she almost continuously passed semi-solid black fæces. Her temperature rose to 102° F., and the transfusion was stopped after 400 millilitres had been given.

The hæmorrhage into the bowel still continued, and the patient showed no improvement. This second reaction was reported and a request was made for the patient's blood to be Rh tested. She proved to be Rh-negative and her serum now contained weak anti-Rh agglutinins. Two group O Rh-negative donors were immediately obtained, and their blood was matched with the patient's by Levine's technique (thirty minutes' incubation at 37° C.). The blood samples proved to be completely compatible; 600 millilitres of Rh-negative blood were administered on July 4 without reaction, and the patient felt much improved. Vomiting and bowel movements had ceased. Her hæmoglobin value on July 5 was 35%.

Unfortunately, samples of the patient's serum taken before the first and second transfusions (June 23 and July 3, 1945) had been discarded, so that no tests for Rh antibodies were possible on these specimens. On July 8 the patient had a severe epistaxis and some vomiting. Her hæmoglobin value on July 9 was only 25%. The blood of two more group O Rh-negative donors was cross-matched with the patient's by Levine's technique, and 1,000 millilitres of blood were given into the left forearm, again without reaction and with obvious benefit to the patient. Her hæmoglobin value on July 12 was 45%.

On July 10 a further specimen of blood was taken for tests for Rh antibodies. The serum proved to contain anti-Rh agglutinins of titre 512 when tested against Rh_1 cells. The first two donors (C.H. and A.W.) were later recalled for Rh typing, and the results are shown in Table II.

Apart from a troublesome cough, the patient felt much better, and it was decided to give her another blood transfusion further to improve her condition. Rh-negative blood was again used on July 24, and the hæmoglobin value rose to 48% on July 27. (It had been 40% before the transfusion.) In spite of this increase, the patient complained of headache and vomited continuously. She was nauseated for four or five days after the transfusion. No hæmolytic phenomena developed, and this phenomenon might be explained by the fact that the patient suffered chronically from headaches and vomiting, and that she was also "psychologically sensitized" to, and detested, blood transfusions.

Her hæmoglobin value remained around 45% to 50% until the end of August, when it had again fallen to 30%. By September 6 it was 25%, and a further transfusion was arranged. As every available vein had been used, the sternal route was chosen. Five hundred millilitres of Rh-negative blood were administered by this route on September 7, 1945. The transfusion was reactionless, except for pain at the needle site. Her hæmoglobin value rose satisfactorily as a result.

A severe epistaxis lasting one hour, however, necessitated another transfusion, which was given by the sternal route on October 10. Response was satisfactory. Her condition remained more or less *in statu quo* for some time, and by oral administration of "Ferro-Hepamult" she succeeded in reaching a hæmoglobin value of 65% on December 7. She was discharged from hospital on December 22, as she desired to be home for Christmas, and, moreover, she was feeling quite well. She was, however, again admitted to hospital on January 18, 1946. Six days previously she had passed a quantity of blood *per rectum*, and two days later she had vomited a pint of heavily blood-stained fluid. Her hæmoglobin value on her admission to hospital was 30%. On January 2 she was given a transfusion of 1,000 millilitres of Rh-negative blood. She was still in hospital at the time this paper was prepared.

Material and Methods.

The first sample of blood for an Rh investigation from this patient, of blood group A, was received on July 4, 1945—one day after the second transfusion reaction had occurred. Washed cells suspended in saline solution were tested against an Rh-testing serum by the standard tube technique and were considered to be Rh-negative. The patient's serum was then tested for the presence of atypical antibodies by the tube technique against known Rh-positive cells of group O, and the serum was found to contain weak Rh antibodies. Titre determinations on a sample of serum obtained one week after this transfusion reaction showed the serum to have an agglutinating titre of 512 when tested against group O Rh_1 red cells. The patient's cells were also confirmed as Rh negative. No further investigations were made on this sample of serum until some eight weeks later, when it was tested for Rh specificity by one of us (R.T.S.), using cells of known Rh subtypes and a slide technique. It was found that the serum was a specific and potent anti-Rh′ (70%) serum and contained anti-Rh_0 "blocking" antibody.

It was then decided: (i) to test the available donors for their respective Rh types; (ii) to obtain progressive samples of the patient's blood and follow the changes in Rh-agglutinating and "blocking" titres; (iii) if the Rh-agglutinating titre had fallen in the meantime, to attempt, if possible, reimmunization with small intravenous doses of cells of group O Rh′.

Samples of blood (two drops) were collected into amounts of one millilitre of a modified Rous and Turner solution from the patient and donors, and were sent to Melbourne by air-freight. (We are grateful to Dr. Yum, who kindly collected blood from one donor at Gladstone, Queensland, and also to Dr. G. A. Kelsall, Perth, Western Australia, who sent us a large supply of blood of type Rh′ for experimental purposes.) The Rh types were determined on slides as described by Simmons *et alii.*(12) The cells were tested directly from the Rous and Turner solution, as this procedure is considered preferable to the use of cells washed in saline solution, and is much less bother and less time-consuming.

The anti-Rh titre determinations of the patient's serum were performed by serial dilutions in small (two inches by 0·25 inch) test tubes (parallel tests were also performed on slides), and throughout the experiments the same control test cells of group O MN Rh_1 were used, except where otherwise indicated. Three different diluents—saline solution, group AB serum and 25% strength human albumin—were used in diluting the patient's serum, while the test cells were suspended in (*a*) saline solution, (*b*) Rous and Turner solution, (*c*) group AB serum, (*d*) 25% strength albumin and, finally, (*e*) cells washed three times in saline solution which were used neat and added with a platinum loop to give the usual concentration.

Results.

The results of the Rh type tests on blood samples from the available donors are set out in Table II. The patient's blood was also confirmed as Rh negative. The tests were made with anti-Rh_0, anti-Rh′, anti-Rh″ and anti-Hr serum.[1]

The four transfusions received by the patient from 1939 to 1945 were all from subjects of blood type Rh_1 (Rh_0'). The patient, as has already been stated, produced anti-Rh serum of type anti-Rh_0'; but the anti-Rh_0 "blocking" antibody converted the serum into one with a specificity of anti-Rh′ (70%), which is in agreement with the statement made by Wiener.(11) As Rh antiserum with a specificity of anti-Rh′ is rare, another "trial bleed" was obtained from the patient, with a view to obtaining blood if the titre was still satisfactory. It was our intention to replace what-

TABLE II.
The Rh Types of Mrs. M.H.'s Donors.

Donor.	Date of Blood Donation.	Rh Type.[1]
L.H.	September 15, 1932.	Not available.
C.H.	January 13, 1939. June 23, 1945.	Rh_1.
A.W.	June 23, 1945.	Rh_1.
O.O.	July 3, 1945.	Rh_1.

[1] The three blood samples tested gave positive results with anti-Hr′ serum (Wiener and Vogel specimen).
The possible genotypes are: R_1r (most common), R_1R_0 and R_0R'.
As the patient was of genotype rr, the son C.H. would therefore be of genotype R_1r.

---

[1] The anti-Rh″ and anti-Hr′ specimens of serum used were samples kindly supplied by Dr. A. S. Wiener, New York.

ever blood was taken with double the amount of blood from an Rh-negative donor. This "trial bleed" was obtained on September 9, 1945, sixty-eight days after the transfusion reaction; but unfortunately the agglutinating titre had dropped to two, so that the serum was useless as anti-Rh′ typing serum. The "blocking" titre, however, was still approximately 512 when the serum was tested by Wiener's blocking test. The test cells used were of group OM Rh_2. The sample of serum was then submitted to various tests, as shown in Table III.

The titre readings were, in general, made after two hours' incubation at 37° C. Some comparative tests were made at room temperature, but incubation at 37° C. was found more satisfactory.

This serum sample, obtained from the patient sixty-eight days after the last transfusion reaction, shows (Table III) only a trace of Rh-agglutinating antibody, which might easily be missed in a routine test. There are a number of interesting features in this table.

1. The Rh "blocking" antibody titres obtained by Wiener's conglutination test and by Diamond and Abelson's albumin test were approximately the same—8,000 to 16,000; but when combinations of the two tests were employed, the titre was shown to be 262,000. With Wiener's original blocking test the titre was only approximately 512.

2. When the test cells were suspended in albumin and a saline diluent was used for the patient's serum, it was surprising to find that the blocking titre was 16,000. With cells suspended in serum tested against the same saline series the titre was 128, but with cells in saline solution the titre was only two. (This figure is the actual Rh-agglutinating titre.)

3. Cells thoroughly washed with three lots of saline solution and used neat in tests against the patient's serum diluted with serum, and against the patient's serum diluted with albumin, gave titres of 16,000 and 2,000 respectively. The lower titre of 2,000 was probably due to the difficulty of obtaining complete agglutination in 25% strength albumin, which is extremely viscid. The neat cells were added to the tests with a 30 gauge platinum loop to give the usual cell concentration. This test follows work carried out by Simmons and Christie (unpublished observations).

4. It was unexpected also to find that cells in saline or Rous and Turner solution tested against the patient's serum diluted with albumin gave an Rh "blocking" titre of 32,000, and the same test cells against the patient's serum diluted with group AB serum gave a titre of 64 to 128. In this respect, therefore, albumin[1] is vastly superior to group AB serum as a diluent.

As a result of this work it has occurred to us that as red cells in the human body are agglutinated and hæmolysed in the presence of Rh "blocking" antibody, causing transfusion reactions or hæmolytic disease of the newborn in maternity cases, and as test cells suspended in serum, plasma or albumin are agglutinated in the presence of "blocking" antibody on slides or in test tubes, while the same test cells suspended in saline solution are not agglutinated when saline solution is used as the diluent for the patient's serum, it may then be possible to explain this simply by postulating that saline solution alters the configuration of the cell surface, whereas in serum, plasma or albumin the cells remain in their normal state, and all (or particular) cell linkages (haptens) are thus readily available for agglutination. We have some support for this theory, in that, if the test cells are suspended in albumin or serum and the "blocking" serum is serially diluted with saline solution instead of serum, then we still obtain strong agglutination, but to a lower titre than when the diluent used is serum or albumin. Also, it would seem that the change in cell structure is reversible, because test cells

---

[1] Attempts to reproduce these results using a highly purified egg albumen solution instead of human albumin have failed.

TABLE III.

Titrations of Patient's Serum (Mrs. M.H.) with various Diluents against Red Cells in various Suspending Fluids.[1]

Diluent for Serum.	Group of Test Cels.	Suspending Medium for Test Cells.	Final Dilution of Patient's Serum.																	
			2	4	8	16	32	64	128	256	512	1,024	2,048	4,096	8,192	16,384	32,768	65,536	131,072	262,144
Normal saline solution.	O MN Rh_1	Normal saline solution	Tr.	—	—															
		Rous-Turner solution ..	1	—	—															
		Group AB serum ..	4[2]	3	3	3	2	2	Tr.	—	—									
		25% albumin	4	4	4	4	3	3	3	3	3	3	2	2	1	1	—	—		
		Washed cells (neat)[3] ..	3	2	1	—	—													
Normal group AB serum.	O MN Rh_1	Normal saline solution..	Tr.	3	2	2	1	Tr.	—	—										
		Rous-Turner solution ..	1	3	3	3	3	2	1	—	—									
		Group AB serum ..	4	4	4	4	4	4	4	4	4	4	4	3	2	1	—	—		
		25% albumin	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	2	2	1
		Washed cells (neat) ..	4	4	4	4	4	4	4	4	4	4	4	3	3	1	—	—		
25% strength human albumin.	O MN Rh_1	Normal saline solution..	Tr.	4	4	4	4	4	4	4	3	3	3	2	2	2	1	—	—	
		Rous-Turner solution ..	1	4	4	4	4	4	4	4	3	3	3	2	2	2	1	—	—	
		Group AB serum ..	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	2	1
		25% albumin	4	4	4	4	4	4	4	4	3	3	2	2	1	—	—			
		Washed cells (neat) ..	4	4	4	4	4	4	4	3	3	2	1	—	—					

Wiener's Original Test for Rh "Blocking" Antibody.

Normal saline solution.	O M Rh_2	Normal saline solution	—	—	—	—	—	—	—	—	—	—	—	—						
After one hour, known anti-Rh_0 serum added, incubated for one hour, result read again			—	—	—	—	—	—	—	1	2	3	3	3						

[1] This table presents one of a series of protocols; all tests were carried out at 37° C.; this "trial bleed" was obtained sixty-eight days after the transfusion reaction.

[2] The figures 4, 3, 2 and 1 indicate degrees of agglutination.

[3] The use here of washed cells (neat) followed work by Simmons and Christie (unpublished).

washed three times with saline solution when used neat, and added to a "blocking" serum serially diluted with serum or albumin, are also agglutinated strongly and to high titres. The finding that saline solution in the cell-serum or cell-albumin mixtures does not prevent agglutination disagrees with Wiener's theory that the success of the conglutination test depends partly on the absence of any added crystalline solution.

Attempted Re-immunization of the Patient.

As no specific anti-Rh′ serum had previously been found in Australia, and as only a few millilitres of the potent serum had been obtained, we attempted to reimmunize this patient by bi-weekly intravenous injections of 0·2 millilitre of group O Rh′ cells suspended in Rous and Turner solution. The patient was given four injections, but her veins were difficult to locate and inject, and also her general condition precluded further attempts. There was, however, slight evidence of titre increase in blood taken subsequently. Hill *et alii*(21) have successfully used larger doses (up to four millilitres) of cells for reimmunization; but such large doses were not deemed wise in this instance in view of the patient's condition.

Soon after our attempted reimmunization of this patient, the Commonwealth Serum Laboratories received from Dr. W. W. Hallwright, of the Wellington Hospital, New Zealand, a generous supply of a potent anti-Rh′ serum for distribution. The details of his case, one of Rh iso-immunization in pregnancy, will be published in a New Zealand journal early in 1946.[1]

Discussion.

This case and the subsequent investigations demonstrate several important points. The first is the danger of repeated transfusions without previous determination of the Rh type of the patient. This point must be again emphasized. The giving of repeated transfusions to patients whose Rh type is not predetermined will inevitably lead to transfusion reactions, as it did in this case. Whilst this point is important, and it is recommended that every hospital with adequate facilities and trained laboratory personnel should perform this Rh test as a routine measure on the blood of all patients likely to have repeated transfusions, it is not advisable to magnify the problem out of its true perspective.

It should be remembered that the initial reaction in an Rh-negative patient due to repeated transfusions of Rh-positive blood is usually mild, and that the reactions become increasingly severe or even fatal. Therefore, any patient who has a transfusion reaction, however mild, should not be given another transfusion without an investigation from the Rh point of view, or at any rate without an attempt to determine the cause of the reaction. Moreover, it is known that of those subjects who might become sensitized, only one or two in fifty actually do so.

Levine,(15) dealing with unintentional iso-immunization of the Rh-negative female population, has issued a report which should be borne in mind, particularly when more Rh-testing facilities are available. In a vast number of cases studied by him he found 25 Rh-negative women whose first-born suffered from *erythroblastosis fœtalis*, and of these women 16 had a history of previous blood transfusion. There were 10 fœtal deaths in this group of 16. Levine makes the recommendation that no blood transfusion should be given to young women, girls or female infants unless tests for the Rh factor are carried out. Those found to be Rh negative must receive Rh-negative blood. As it is impracticable, without adequate laboratory facilities and trained personnel throughout the country, to determine the Rh type of every patient who is to receive a blood transfusion, it is obvious then that the only practical procedure is to have Rh tests performed when a definite indication exists, particularly in the case of pregnant or parturient women, or in cases in which multiple transfusions are required. When this cannot be done, the recent compatibility tests which are discussed here are now so sensitive and simple that it should be possible to find compatible donors without any transfusion risk to the patient, even if she is already sensitized.

One important technical point which must not be overlooked in connexion with this procedure is that, in a case in which it is known that the patient will require multiple transfusions, it is preferable to determine his Rh type before the first transfusion. This is wise, because, if the patient is Rh negative, the first transfusion of Rh-positive blood may not be destroyed (as the patient is not yet sensitized), so that the Rh-positive (donor) cells will still remain in the patient's circulation. A sample of blood taken from the patient soon after this transfusion would give the type erroneously as (weak) Rh-positive, and so the whole point of possible Rh sensitization might be missed.

The second important point is the accidental transmission of malaria by blood transfusion. The transmission of diseases by blood transfusion has always been one of the problems in a successful service. All precautions can be taken to exclude contaminating organisms, but bacteria or parasites already in the donor blood may present a problem. Obviously no donor who is not in perfect health should be used, nor any donor with a known septic focus. The advisability of testing donors for syphilis is generally known and has been widely discussed, and will not be dealt with here. The problem of malaria transmission in Australia was one which rarely had to be considered prior to the war. We have no tests for latent or inactive malaria. Examination of a blood film (thick or thin) gives negative results more often than not in such cases. It was formerly thought that it was sufficient to exclude donors who had suffered from malaria within, say, the last five or six years. However, the recent report of McClure and Lam(18) disproves this point. These authors reported two cases of malaria resulting from the transfusion of blood which had been stored in the refrigerator (one bottle for five days). The donors were related and had spent their childhood in Sicily. However—and this is important—neither of them had had any symptoms of malaria for twenty-five years. It is advisable, therefore, to exclude donors who have lived in malarious areas, whether they have or have not suffered from malaria. Of course, as McClure and Lam point out, the blood may be converted into plasma, for filtration renders it free of parasites. An official definition of "the malarious area" so far as this country is concerned, is incorporated in a handbook published by the Red Cross Blood Transfusion Service (Western Australian Division) and kindly sent to us by the honorary director, Dr. G. A. Kelsall; the definition given is "New Guinea and the South-West Pacific Islands lying West of 170° E. long. and North of 20° S. lat., with the exception of Thursday Island and Horn Island". "Potentially malarious area" is roughly that part of Australia north of 19° south latitude, except the Atherton plateau above 2,000 feet and the coastal strip up to and including Broome in Western Australia.

Rubenstein *et alii*(19) also report 12 cases of post-transfusion malaria. In five of these cases from twelve to twenty-seven years had elapsed since the donors resided in a malarious area, and moreover, not one of these donors had a past history of manifest malaria. It is of interest that in nine of these twelve cases the infecting parasite was the *Plasmodium malariæ* (quartan). Whilst post-transfusion malaria is rarely fatal if quickly recognized and treated, it is an added burden for a patient already taxed enough to need a blood transfusion, and naturally should be prevented whenever possible. The "remedy" is the rejection of all donors who have lived in malarious areas. Whether or not their blood is stored, whether or not they have had manifest malaria, and whether or not (in the case of service personnel) they have had prophylactic "Atebrin" or other anti-malarials, they must be regarded as potential transmitters of malaria.

In the present case the donor should obviously have not been used, as he had known recent malaria. Two other cases of post-transfusion malaria are known to one of us to have occurred in Australia in recent years, and there have probably been others. We know that this danger is being carefully watched by the various divisions of the Red Cross Blood Transfusion Service in Australia, but it is timely that the warning should be sounded again.

---

[1] See *The New Zealand Medical Journal*, February, 1946, page 2.

The third important point is the production of a specific anti-Rh' (70%) antiserum (the first reported in Australia) by iso-immunization of an Rh-negative subject by Rh-positive donors of sub-type Rh_1.

As was mentioned in the quotation from Wiener,(11) the Rh_0 antigen is by far the most antigenic. Here we have an Rh-negative patient immunized by the Rh_1 (Rh_0') antigens (the last four donors were of Rh_0' type), who yet at first sight seemingly produced an anti-Rh' antibody to the exclusion of the anti-Rh_0 antibody. This would be in complete disagreement with the statement that the Rh_0 antigen is by far the most antigenic, Rh' falling well behind in antigenicity. The matter was elucidated, however, by an investigation of the "blocking" properties of the serum. As will be seen from Table III, the serum contains a potent anti-Rh_0 "blocking" antibody, which by Wiener's blocking test was shown to have a titre of 512, but which by the conglutination or albumin test had a titre of at least 8,000 to 16,000. (These tests, part of a series, were performed on a sample of the patient's serum collected about ten weeks after the transfusion reaction, at which time the anti-Rh' agglutinating titre estimated by the ordinary saline method had dropped from 512 to two.) Thus the antiserum produced was actually an anti-Rh_0' serum; in it the anti-Rh_0 "blocking" antibody had neutralized the anti-Rh_0 agglutinating antibody if this was originally present. In other words, the serum produced was a "specific" but not "pure" anti-Rh' serum, and the "blocking" antibody had converted an anti-Rh_0' (87%) serum into an anti-Rh' (70%) serum. The same thing can be done *in vitro* to obtain specific anti-Rh' and anti-Rh″ (30%) serum for Rh typing from the corresponding polyvalent antiserum. The production of a "pure" anti-Rh' serum is an extremely rare occurrence; but it can take place when an Rh_2 (Rh_0'') person is immunized (by a fœtus or blood transfusion) by an Rh_1 (Rh_0') or Rh_1Rh_2 ($Rh_0'Rh_0''$) person. Since both the patient's blood and the donor or fœtus's blood contain a common Rh_0 antigen, the patient can react only to the Rh' antigen. Similarly an Rh_1 person can produce a "pure" anti-Rh″ serum by immunization with blood of Rh types Rh_2 or Rh_1Rh_2. This has occurred in a few cases (all through pregnancy), as described by Levine and Waller(17) and Wiener *et alii*,(18) and these cases yielded antisera which, of course, are ideal for Rh typing (as distinct from simple Rh testing). However, although the necessary matings are quite common, these "pure" sera are but rarely produced, because of the poor antigenicity of the Rh' and Rh″ antigens. To date no sample of serum of specificity anti-Rh_0'' or anti-Rh″ has been found in Australia, although a constant search is in progress.[1]

The fourth point is the value of the Rh "blocking" test as a guide in preventing transfusion reactions. The value of Wiener's "blocking" test is graphically demonstrated in Table III. This specimen of serum, obtained sixty-eight days after the last transfusion of Rh-positive blood, when tested by the usual tube or slide technique of saline dilutions and with Rh_1 cells suspended in saline solution, had a weak Rh-agglutinating titre of two; this might be missed in an ordinary laboratory compatibility test, particularly if it was carried out at room temperature. If, now, to the same set of tubes we add two drops of an anti-Rh_0 agglutinating serum (suitably diluted), mix and reincubate and read the result again, we find that the agglutination of the cells[2] is "blocked" out to a dilution of approximately 512, and thus it is proved that a potent Rh "blocking" antibody is present.

As this "blocking" antibody is just as lethal as the usual Rh agglutinating antibody to transfused incompatible red cells, if not more so, the importance of the test for blocking is apparent. It is possible for sensitization (either by transfusion or by pregnancy) to occur, in which the only antibody present is the "blocking" type. This explains some of the cases in which, although obvious sensitization to the Rh factor has taken place, there is no *in vitro* agglutination of test cells. Such cases can be very puzzling if advantage is not taken of the recent tests for Rh "blocking" antibody.[1] These "blocking" antibodies are common as the result of iso-immunization in pregnancy, but until recently no actual case had been reported of a transfusion immunization resulting in the production of "blocking" antibodies without agglutinating antibodies. However, Unger and Wiener(28) have recently given details of such a case, in which a "blocking" antibody titre of 480 was present and which caused, and was detected following, a transfusion reaction. Wiener's original "blocking" test has now been superseded by the conglutination and albumin tests.

The fifth important point is the greater value of the conglutination test (compatible serum being used for cell suspensions) or the albumin test, 20% to 25% strength serum albumin being used as a suspending medium for red cells in tests for Rh "blocking" and agglutinating antibodies, or in cross-compatibility tests.

The sixth point is the higher Rh "blocking" titres which are found when a combination of the conglutination and albumin tests is employed for Rh titre determinations.

The conglutination test (test cells suspended in normal group AB serum and patient's serum serially diluted with group AB serum), or the more recent substitution of 20% to 25% strength albumin as the suspending fluid or diluent instead of serum, has a greater value than the blocking test, in that both these tests give pronounced agglutination with both Rh "blocking" and agglutinating antibodies in a direct one-stage test. Table III shows a convincing demonstration of the superiority of the last-mentioned tests. Here is shown the patient's serum, which, when tested with cells in saline solution *versus* saline dilutions of the test serum (original Rh-agglutination test), gives an Rh-agglutinating titre of only two; this, as was previously mentioned, could be missed. Wiener's blocking test shows the serum to have an Rh "blocking" titre of approximately 512, but by the conglutination test and by the albumin test the titre was 8,000 to 16,000. The original saline test is a true measure of the ordinary Rh-agglutinating antibody titre,(25) which we have confirmed with a number of specimens of anti-Rh serum; but the serum or albumin tests measure both agglutinating and blocking antibody titres. However, when a combination of the conglutination and albumin tests was used, the Rh "blocking" titre was found to be 262,000. One could quite well imagine the severe transfusion reaction or severe fœtal damage which could occur with such a high-titre Rh "blocking" serum as that mentioned above, and yet the presence of Rh antibodies might have been missed in the past by the usual cross-matching tests prior to transfusion or in saline titre determinations.

Routine Rh Testing Prior to Transfusion.

Another point worthy of mention is that, while the standard anti-Rh_0 agglutinating serum will generally be sufficient in the small laboratory for clinical Rh testing, amongst those subjects classed as Rh-negative will be some of the rare types, Rh' (1%), Rh″, Rh'Rh″ and Rh_y (very rare). In a properly organized donor service these types will be eliminated by the use of the rarer Rh sub-type sera anti-Rh' and anti-Rh″. Some persons known to be Hr negative will also be listed if possible, should such donors be required.

In the case described by us we have a true Rh-negative patient (genotype rhrh) who had been sensitized by the Rh_1 antigen and had developed anti-Rh_0 (blocking) and anti-Rh' (agglutinating) antibodies. If the subsequent Rh-negative donors used were chosen by the use of anti-Rh_0 serum only, an Rh' individual would be regarded as Rh negative and hence seem a suitable donor. Cross-matching tests would show up the incompatibility; but if by any chance these tests were omitted, the patient would suffer a severe, if not fatal, hæmolytic reaction. Cappell(22) has pointed this out recently, and suggests classifying blood (from a practical viewpoint) into an Rh-positive type if it contains the Rh_0 antigen or an Rh-negative type if it lacks this antigen. As he remarks: "The possession of the dominant antigen Rh_0 is the fundamental thing which should determine whether an individual requiring transfusion is called Rh positive or Rh negative." From the therapeutic standpoint the person who lacks the Rh_0 antigen should receive transfusions only of Rh-negative blood. The donor, however, must be truly Rh-negative (that is, of genotype rhrh).

---

[1] Since we prepared this paper for publication, a specific anti-Rh″ serum has been found by the Red Cross Blood Transfusion Service (New South Wales Division).

[2] Actually the "blocking" titre in Table III was determined with group $OMRh_2$ cells, as they do not produce agglutination with an anti-Rh' antibody. As the titre of the anti-Rh' agglutinating antibody was now only two, we could have used Rh_1 cells equally well at this stage.

[1] The details of another more intricate test by means of rabbit anti-human-globulin serum has recently been described (see Coombs, Mourant and Race, *The British Journal of Experimental Pathology*, Volume XXVI, August, 1945, page 255).

If we consider, from the point of view of blood transfusion, the extremely rare type of cases mentioned by Diamond and Denton,(25) in which blocking antibodies of both Rh_0 and Rh' specificity were encountered, cross-matching tests with an Rh' donor (believed to be Rh negative if only anti-Rh_0 serum had been used for testing) by the usual means would obviously reveal no agglutination; but the blood is actually incompatible and would be destroyed *in vivo* with subsequent reaction.

Here again we see the superiority of the conglutination test of Wiener or the albumin test of Diamond and Denton in detecting Rh sensitization. In any of these cases just mentioned, direct incompatibility would be shown by the use of either of these tests.

Summary.

1. A case is described of an Rh-negative patient who, as a result of blood transfusions, was not only sensitized to the Rh factor but also infected with malaria.
2. The antibodies found in the patient's serum as the result of Rh iso-immunization have been analysed.
3. The measures necessary to avoid these preventible accidents are described and the value of the various tests to detect Rh sensitization are discussed.
4. Recent tests made by us in addition to those reported here show that cells suspended in 25% strength human albumin are more sensitive than cells suspended in normal group AB serum when tests are made for the presence of Rh agglutinating or "blocking" antibodies; this confirms the claim of Diamond and Denton that albumin is the most satisfactory suspending medium.
5. For the determination of the Rh "blocking" titre a combination of the two tests (conglutination and albumin) gives the highest titre readings. The testing of cells in albumin against the patient's serum serially diluted with normal group AB serum gives excellent results.
6. Cells suspended in 20% to 25% strength albumin or, in its absence, in compatible human serum, should now be used in all cross-compatibility tests prior to transfusion. The use of saline solution as a suspending medium for the test cells should be strictly avoided. The tests should be performed at both 37° C. and at room temperature.
7. A simple theory is advanced to explain why cells suspended in albumin or serum are agglutinated by Rh "blocking" antibody and why cells in saline solution fail to be agglutinated.

Acknowledgements.

We are grateful to Dr. J. V. Duhig, Director of the Pathology Department, Brisbane Hospital, and to Dr. F. G. Morgan, Director of the Commonwealth Serum Laboratories, for their permission to carry out this investigation; to Dr. E. Murphy, of Brisbane, for permission to publish details of this case, and for his permission and that of the patient to attempt reimmunization.

References.

(1) P. Levine and R. E. Stetson: "An Unusual Case of Intra-Group Agglutination", *The Journal of the American Medical Association*, Volume CXIII, July 8, 1939, page 126.

(2) K. Landsteiner and A. S. Wiener: "An Agglutinable Factor in Human Blood Recognised by Immune Sera for Rhesus Blood", *Procecdings of the Society for Experimental Biology and Medicine*, Volume XLIII, 1940, page 223.

(3) A. S. Wiener and H. R. Peters: "Hemolytic Reactions following Transfusion of Blood of the Homologous Group, with Three Cases in which the Same Agglutinogen was Responsible", *Annals of Internal Medicine*, Volume XIII, June, 1940, page 2306.

(4) P. Levine, E. M. Katzin and L. Burnham: "Isoimmunization in Pregnancy", *The Journal of the American Medical Association*, Volume CXVI, 1941, page 825.

(5) A. S. Wiener: "Hemolytic Reactions following Transfusions of Blood of the Homologous Group II. Further Observations on the Role of Property Rh, particularly in Cases without Demonstrable Isoantibodies", *Archives of Pathology*, Volume XXXII, 1941, page 227.

(6) A. S. Wiener: "Hemolytic Transfusion Reactions: III. Prevention, with Special Reference to the Rh and Cross-Match Tests". *American Journal of Clinical Pathology*, Volume XII, June, 1942, page 302.

(7) A. S. Wiener and E. B. Sonn: "Additional Variants of the Rh Type Demonstrable with a Special Human Anti-Rh Serum", *The Journal of Immunology*, Volume XLVII, December, 1943, page 461.

(8) A. S. Wiener: "Nomenclature of the Rh Blood Types", *Science*, Volume XCIX, June 30, 1944, page 532.

(9) A. S. Wiener: "A New Test (Blocking) for Rh Sensitization", *Proceedings of the Society for Expcrimental Biology and Medicine*, Volume LVI, June, 1944, page 173.

(10) R. R. Race: "An 'Incomplete' Antibody in Human Serum", *Nature*, Volume CLIII, June 24, 1944, page 771.

(11) A. S. Wiener: "Competition of Antigens in Iso-Immunisation by Pregnancy", *Proceedings of the Society for Experimental Biology and Medicine*, Volume LVIII, 1945, page 133.

(12) R. T. Simmons, R. Jakobowicz and G. A. Kelsall: "The Rh Factor: A Survey of the Sub-Types of White Australians", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, December 29, 1945, page 493.

(13) A. S. Wiener: "Conglutination Test for Rh Sensitization", *The Journal of Laboratory and Clinical Medicine*, Volume XXX, August, 1945, page 662.

(14) A. S. Wiener: "Theory and Nomenclature of the Hr Blood Factors", *Science*, Volume CII, November 9, 1945, page 479.

(15) P. Levine: "Prevention of Unintentional Isoimmunization of the Rh Negative Female Population", *The Journal of the American Medical Association*. Volume CXXVIII, July 28, 1945, page 946.

(16) R. D. McClure and C. R. Lam: "Malaria from Blood Bank Transfusions", *Surgery, Gynecology and Obstetrics*, Volume LXXX, March, 1945, page 261.

(17) P. Levine and R. K. Waller: *American Journal of Clinical Pathology* (in the press); quoted by Wiener *et alii.*(18)

(18) A. S. Wiener, L. J. Unger and E. B. Sonn: "New Data on the Distribution of the Rh Blood Types", *Proceedings of the Society for Experimental Biology and Medicine*, Volume LVIII, January, 1945, page 89.

(19) A. D. Rubenstein, M. H. Shulman and D. Merrill: "The Hazard of Transfusion Malaria after the War", *The New England Journal of Medicine*, Volume CCXXXIII, August 23, 1945, page 234.

(20) R. A. Fisher: *Nature*, Volume CLV, May 5, 1945, page 543.

(21) J. M. Hill, S. Haberman and A. V. Orozco: "Preparation of Potent Anti-Rh Typing Serums by Injection of Rh Positive Blood into Previously Isoimmunised Individuals", *The Journal of the American Medical Association*, Volume CXXVIII, July 28, 1945, page 944.

(22) D. F. Cappell: "Routine Rh Testing", *British Medical Journal*, September 22, 1945, page 400.

(23) L. K. Diamond and N. M. Abelson: "The Determination of Anti-Rh Agglutinins—An Accurate and Rapid Slide Test", *The Journal of Laboratory and Clinical Medicine*, Volume XXX, March, 1945, page 204.

(24) L. K. Diamond and N. M. Abelson: "The Detection of Rh Sensitization: Evaluation of Tests for Rh Antibodies", *The Journal of Laboratory and Clinical Medicine*, Volume XXX, August, 1945, page 668.

(25) L. K. Diamond and R. L. Denton: "Rh Agglutination in Various Media. With Particular Reference to the Value of Albumin", *The Journal of Laboratory and Clinical Medicine*, Volume XXX, October, 1945, page 821.

(26) A. E. Mourant: "A New Rhesus Antibody", *Nature*, Volume CLV, May 5, 1945, page 542.

(27) J. Murray, R. R. Race and G. L. Taylor: "Serological Reactions Caused by the Rare Human Gene Rh_z", *Nature*, Volume CLV, January 27, 1945, page 112.

(28) L. J. Unger and A. S. Wiener: "Observations on Sensitization to the Rh Factor by Blood Transfusion", *American Journal of Clinical Pathology*, Volume XV, July, 1945, page 280.

(29) L. K. Diamond and N. M. Abelson: "The Importance of Rh Inhibitor Substance in Anti-Rh Serums", *The Journal of Clinical Investigation*, Volume XXIV, 1945, page 122.

THE RESULTS OF PENICILLIN THERAPY IN THE TREATMENT OF GONORRHŒA.[1]

By STEFANIA W. SIEDLECKY,
Sydney.

IT is difficult for a junior member of the medical profession to talk with authority on any subject from personal experience. There is open to the resident medical officers in hospitals, however, a fund of information to be obtained from hospital records, not the least of which is how not to compile histories. The resident medical officers in hospitals, more than any other group of medical practitioners, have golden opportunities for research into hospital records.

---

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 29, 1945.

The subject of venereal disease is one of intense interest and great national importance. Just how important it is can be seen by examining the age incidence of all venereal disease among females in the past four years, which are the war years (see Table I). The effect of venereal disease and of the social and psychological conditions associated with the actual infection is a grave threat to our future mothers and to our national family life. Over the past four years, the incidence of venereal disease occurring in young girls and women aged under twenty-five years rose from 42·4% in 1941 to 58·8% in 1943 and 51·9% in 1944. From the point of view of the future fertility of these patients, it is in this age group that the most tragic damage is done. Of the total, 52·7% were married women. These young women come from home conditions of frustration and careless, hasty marriages. The effect of the war stresses and the influx of Allied servicemen with lonely hearts and bulging pockets have caused the figures for venereal disease to soar.

Table I.

Age Incidence for all Venereal Disease in Females for the War Years.[1]

Year.	Age Group.		Total Incidence Under 25 Years.
	16 to 20 Years.	21 to 25 Years.	
1941	18·3%	24·1%	42·4%
1942	22·9%	25·8%	48·7%
1943	27·9%	27·9%	58·8%
1944	23·0%	28·9%	51·9%

[1] Of total number of patients, 52·7% were married.

This paper will deal only with gonorrhœa, as the treatment of this disease has varied so dramatically over the past few years. During the war years, with the rise in the incidence of venereal disease, the figures for gonorrhœa are interesting (see Table II). The dramatic figure for 1944 is due not only to the influx of Allied servicemen, but also to the careful tracking down of suspected sources of infection by the American army authorities, and the subsequent fall is largely due to removal of this source of infective patients. For example, in 1944, 2,280 notifications of possible sources of infection were received by the Board of Health; 1,423 of these were received from the American army, 851 from other sources. Of these notified sources, 835 were located, and 486 of the subjects or 58·2% were found to be infected; this means, if the same ratio is used, that about 800 possibly infected people were never found.

Table II.

New South Wales Incidence of Gonorrhœa.

Year.	Males.	Females.
1941	2,936	465
1942	3,857	615
1943	2,603	819
1944	2,106	1,205
To October 31, 1945	2,213	595

In addition to voluntary patients and patients notified as sources of infection, the National Security Regulations, in force during the war, brought another group of patients to venereal disease clinics—vagrants who were ordered by court to attend a clinic for examination. In 1944, 352 women vagrants were directed to attend for examination. Of these, 183 attended and 96 or 52·4% were found to be infected.

The Rachel Forster Hospital Special Clinic.

In assessing the results of penicillin therapy in gonorrhœa, I have examined the records of the Rachel Forster Hospital, Redfern, over a period of fifteen years, from 1930 to the end of October, 1945. During this period the attendances of new patients have remained fairly constant until 1937, with a rise prior to and during the first war years, and the tremendous rise in the last three years is due partly to the arrival of Allied servicemen in Australia and partly to the factors mentioned above (see Table III). This clinic is the largest venereal diseases clinic for women in Australia, and has been functioning since 1926 so successfully that the hospital has had a hard struggle to be recognized as a general hospital and is still sometimes regarded as a venereal diseases hospital only.

These results therefore apply only to female patients, but I shall make some comparisons with treatment of male patients.

Corresponding to this fifteen-year period, I have examined 3,563 gonorrhœa histories (see Table IV). The results are compiled from the records of 2,434 patients who completed their treatment at the clinic. At first glance one of the results of penicillin treatment is seen to be a fall in the percentage of patients who defaulted from treatment before cure. Of all patients treated before the introduction of penicillin, 22·8% defaulted, whereas in the penicillin group 14·3% defaulted. This, as will be seen later, is probably related to the shorter time and more convenient methods of treatment.

Table IV.

Patients Examined in Each Group.

Treatment.[1]	Patients Completing Treatment.	Patients Transferred Elsewhere.	Defaulters.	Percentage of Defaulters.
Local	1,054	336	736	22·8
Sulphonamide ..	1,093			
Penicillin	287	8	49	14·3

[1] The number of patients examined was 3,563; the number who completed treatment was 2,434.

The patients are divided into three groups—those treated (i) by local methods only, (ii) by sulphonamides and (iii) by penicillin.

Diagnosis.

The diagnosis rests on the demonstration of the Gram-negative intracellular diplococci in smears taken from infected parts. Extracellular diplococci resembling gonococci in shape and staining reactions are regarded as suspicious and worthy of further investigation if clinical findings and history suggest the possibility of infection. Cultural examination of the discharge is satisfactory only if carried out with a special selective technique.

Positive Reaction to the Gonococcal Complement Fixation Test.

The question now arises of the significance of the positive gonococcal reaction complement fixation test for

Table III.

New Attendances, Rachel Forster Hospital Special Clinic.

1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
236	261	247	257	219	263	326	303	405	365	330	322	1,269	1,312	1,011

gonorrhœa (see Table V). The positive gonococcal reaction is not regarded as diagnostic of gonorrhœa. It is variously regarded as being an indication of a gonorrhœal focus somewhere in the body, and as an indication of previous infection. It is probable that there are many fallacies for this test—for example, *Micrococcus catarrhalis*. The explanation for negative results in patients from whom smears have been examined with positive findings, has been that in these cases there is free drainage of infective material.

TABLE V.

Gonococcal Reaction of 789 *Non-Notifiable Patients.*

Test.	Number.
Result of test:	
Positive gonococcal reaction ..	574 cases.
Incomplete positive gonococcal reactions	215 cases.
Second blood test	334 cases.
Number of tests made:	
One	200 patients.
Two	230 patients.
Three..	231 patients.
Four	85 patients.
Five or more	43 patients.
Total with three tests or more ..	359 patients.

I do not wish to enter into the controversy over the cause of a positive gonococcal reaction, but to quote some figures from the clinic (see Table V). In a series of 789 patients who attended the clinic for examination, and who were never proved to be infected, a positive or incomplete reaction was found in the first or subsequent blood test. It is the routine of the clinic whenever possible and if the patients will attend—for they cannot be compelled to do so—that any patients with a history or clinical findings suggestive of a possible Neisserian infection, should have in addition to the smear examined on the first attendance, two subsequent smears examined as soon as possible after the following menstrual periods, and a second blood test at an interval of two months, before the patient is reassured that she is free from infection. Any concealed syphilitic infection is found at the second blood test, but as it is for this reason that the second blood sample is taken, the gonococcal reaction is not always recorded, nor is this test always requested. In this series of 789 non-notifiable patients a second blood test was made in 334 instances; this means that in some 400 odd cases a positive Wassermann reaction may have been developing. Four hundred and thirty did not have the required number of confirmatory smears, and in spite of the positive gonococcal reaction could not be notified as giving positive results or forced to attend for further tests. Three hundred and fifty-nine patients who had three or more smears examined were considered free from infection.

Of these non-notifiable patients, 126 or 15·9% had associated conditions which would give support to the possibility of previous infection, as outlined in Table VI. Sulphonamides had previously been taken with or without medical advice by fourteen patients.

Positive Gonococcal Reaction in Infected Patients.—Of 1,830 infected patients whose gonococcal reaction was recorded at the first blood examination, 1,204 or 65·8% gave a positive gonococcal reaction, and 626 or 34·2% gave no gonococcal reaction (see Table VII). Of these, 554 or 30·3% continued to give positive reactions in spite of treatment, 342 or 18·7% ceased to give reactions after treatment, 280 or 15·8% continued to give no reactions in spite of infection, and 164 or 9%, who gave negative results at the first examination, gave positive results at the second.

TABLE VI.

Associated Conditions in Non-Notifiable Patients with Positive Gonococcal Reaction.

Condition.	Number of Patients.
Syphilis	64
Salpingitis	4
Previous gonorrhœa	13
Bartholin's abscess	2
Trichomonas vaginalis	32
Monilia	7
Venereal warts	4

TABLE VII.

Gonococcal Reactions among 1,830 *Confirmed Gonorrhœa Patients.*

Examination.	Positive Gonococcal Reaction.	No Gonococcal Reaction.	Unrecorded.
First examination ..	1,204 (65·8%)	626 (34·2%)	—
Second examination:			
Previous positive result	554 (30·3%)	342 (18·7%)	298 (16·3%)
Previous negative result	164 (9·0%)	280 (15·8%)	192 (9·4%)

In the total number of treated patients, 159 yielded "positive" smears only after two or more tests; this indicates the need for repeated tests if infection is suspected. The positive gonococcal reaction can only be regarded as an indication for further tests, and even if no gonococcal reaction is produced, repeated smears should be examined if the history or clinical findings are suspicious, and cervix, urethra and rectum should all be examined.

Criteria of Cure.

The persistence of a positive gonococcal reaction does not mean that the patient is not cured. At the clinic, patients are discharged after negative results have been obtained on the examination of three smears, and if the patient is clinically free from infection. Persistence of a discharge may be due to a concurrent trichomonas or monilia infection. A second blood test is always made as a routine measure to detect possible early syphilis, which may have been missed in the earlier test. In the case of female patients this means a second test after an interval of two or three months; but among males, as the duration of treatment has now been reduced to about six weeks, it is possible that a positive Wassermann reaction may develop after the patient's discharge from the clinic. If possible all patients should have the second test at an interval of three months or more after the first.

In males, smears are taken after prostatic massage, at intervals of one or two weeks, and when the result is negative, a sound is passed and examination of smears is repeated. The patient is discharged from the clinic after three consecutive smear examinations have given negative results.

Details of Treatment.

Local Treatment.

I have grouped all the methods of treatment used before the introduction of sulphonamides under the heading of local treatment. Briefly, the patients attended the clinic at varying intervals, from each day to each week, for vaginal douches, application of various antiseptics to the cervix, urethral dilatation and massage and urethral and rectal irrigations, according to the clinical signs. Included in this group are patients treated with various vaccines and by protein shock, none of which appeared to alter the course of the infection to any great extent. Tests were made only when clinical signs were improving. Rectal examinations were not carried out as extensively as now, unless there were signs of infection, such as rectal hæmorrhage and pain. Children were treated in addition with injections of theelin. Complications such as Bartholin's abscess, erosions and salpingitis were treated symptomatically as they appeared.

Sulphonamide Treatment.

With the introduction of the sulphonamides, treatment changed vastly. The attendances were reduced to once or twice a week, unless special indications were present. Urethral and rectal irrigations were continued. The drugs

Akta-Vite

Nutritive Food Tonic

Each 10 grammes (approximately 2 teaspoonfuls) contains not less than:

Vitamin A	2,000 Int. Units
Vitamin B_1	300 Int. Units
Vitamin C	300 Int. Units
Vitamin D	1,000 Int. Units

Together with dextrose and calcium phosphate in a chocolate base.

- For the treatment of those vague conditions of sub-normal health—nervous exhaustion, sleeplessness, anorexia, gastro-intestinal atony with chronic constipation.
- In debility following severe illness, and for those cases where treatment necessitates restriction of the normal diet.
- During pregnancy and childhood.
- As a stimulant for sub-normal lactation.

In 5 and 10 oz. jars and 40 oz. tins.

NETT WEIGHT
10 OZS
AKTA-VITE
REG TRADE MARK
Nutritive Food Tonic
CONTAINING 4 IMPORTANT VITAMINS
A B C D
Nicholas Product
NICHOLAS PTY LTD MELBOURNE VIC

A NICHOLAS ETHICAL PRODUCT

"ALPHIDINE" NON-TOXIC IODINE IN RHEUMATIC AND RHEUMATOID CONDITIONS

"PALATINOID" "IOSAL" (O.S. & Co.) No. 7190

℞ *Alphidine* - gr. ½
Thyroid - - gr. ½
Acytosal - - gr. 4

The formula of this Palatinoid was suggested to us by Dr. Watt, of Guy's Hospital, London, and, in the opinion of leading Practitioners, it has proved the most valuable addition to Rheumatism therapy of recent years, and especially so in the case of elderly people. In menopausal Rheumatism and allied conditions, the results are of outstanding excellence, as evidenced by the case histories available.

"PALATINOID" ARTHRITAL (O.S. & Co.) No. 7421

℞ *Alphidine* - gr. ½
Guaiacum Resin gr. 2
Sulphur Praecip. gr. 2

In the Rheumatoid group this Palatinoid is described as the "Alphidine" Spa Treatment. In cases of Arthritis with thickening and set joints it has proved particularly effective. Its use in conjunction with Iodo-Salve as a topical application has been the subject of many favourable reports.

In bottles of 25, 100 and 1,000.

IODO-SALVE (IODISED BALMOSA)

A non-greasy snow-like cream that is rapidly absorbed. In localised pain and stiffness it exercises the characteristic effects of Iodine and the Salicylates. Useful also in Sciatica, Lumbago, Neuritis, etc. In ½oz. jars and 1oz. tubes and 16oz. jars.

Manufactured by

OPPENHEIMER SON & CO. LTD., LONDON

Samples and literature post free on application to:
Agents for Australia and New Zealand: MUIR & NEIL PTY. LTD., 479 Kent Street, SYDNEY

'VARIBAN' Elastic Plaster BANDAGE (Regd.)

For the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

Variban
Elastic Bandage

This Bandage is made from a specially woven selvedge material possessing very elastic properties and evenly spread with an Antiseptic Zinc Oxide Paste. It is self-adhesive, readily conforms to the shape of the limb and when carefully applied forms an even surface dressing which will not crease or slip, yielding an unusually firm support and yet permit of easy removal.

"VARIBAN" Elastic Plaster Bandages are extensively used in many well-known Hospitals for the treatment of Varicose Ulcers, Varicose Veins, Surgical and Orthopædic Cases, Strains, Fractures, etc.

The application of "VARIBAN" Elastic Plaster Bandages for the treatment of Varicose Ulcers, etc., does not necessitate the patient lying up, in fact permits the continuance of light duties. It ensures rapid healing and gives very substantial support to the affected limb.

Supplied in the following widths, 2½" and 3", and when stretched measure 6 yards (approximately).

MANUFACTURED BY

CUXSON, GERRARD & CO. LTD., OLDBURY, ENGLAND
Agents: MUIR & NEIL PTY. LTD., 479 KENT STREET, SYDNEY

were given sometimes as one course of about fifteen grammes, sometimes as two consecutive courses of one or two types of sulphonamide, according mainly to the appearance of the patient and the opinion of the physician. Further courses were given as necessary, if clinical appearances failed to improve and if smears remained "positive". Local application of a sulphonamide was tried in resistant cases, and before penicillin was introduced sulphaguanidine *per rectum* was tried for rectal infections, but in this clinic the cases were too few for the value of the results to be assessed.

Penicillin Treatment.

The routine form of penicillin treatment in use at the clinic is as follows. As soon as possible after the diagnosis is made, the patient is admitted to hospital for one day, and is given a course of 100,000 units of penicillin, 20,000 units intramuscularly every three hours for five doses. Children are given the same dose as adults. Forty-eight hours after the completion of the course, or as soon as practicable, the patient reports back to the clinic for smears to be taken. If these are "positive", she is admitted to hospital for more penicillin treatment; if they are "negative", she reports back to the clinic every week for observation and local treatment. Smear examinations are repeated after each menstrual period.

Local treatment consists of the following procedures: (i) swabbing of the vagina with "Dettol" and glycerin; (ii) application of "Titrol" to the cervix; (iii) application of argyrol to the urethra; (iv) dusting with "Dermatol" powder. This weekly treatment enables any complication such as Bartholin's abscess to be treated, and keeps the patient aware that she is still not cured. Cervical erosions are painted with a 40% solution of silver nitrate at intervals of two, three or four weeks, according to the response.

The rectum is examined and smears are taken at the first visit, and if these yield positive findings, smear examinations are repeated when the post-menstrual smears are examined. In any case, the rectum is examined when smears are taken. No local rectal treatment is given, and no local treatment to the vagina or rectum is advised at home.

If at any time the smear findings become positive, the patient is readmitted to hospital for a further course of penicillin treatment. After two courses of penicillin treatment, if the patient still yields positive findings and appears to have a true resistance to infection, a course of 200,000 units is given. When admission to hospital is delayed, treatment with sulphadiazine is commenced in the meantime. Patients who develop salpingitis are admitted to hospital and treated with sulphadiazine with or without further penicillin, according to the case. Sulphaguanidine is still used for some of the persistent rectal infections.

Male patients at the Board of Health Clinic are treated as out-patients and are given a course of 150,000 units of penicillin—30,000 units intramuscularly every two hours for five doses. This means that while female patients have a maximum concentration of penicillin lasting over about fifteen hours, male patients have a maximum concentration lasting only ten hours, which is compensated for by the higher dose used.

When penicillin was first used, weekly attendances were abandoned, and patients attended at the clinic only for the examination of post-menstrual smears. Although not many patients were treated in this way, it was considered that too many required second courses of penicillin (see Table VIIIA). Of 25 patients treated with penicillin alone, four required two courses of penicillin. In the total series, 28 out of 287 required more than one course. This method has now been replaced by weekly attendances. Altogether 257 patients gave negative results to tests at the first testing, and continued to do so, two patients who later gave positive results were treated with sulphonamides, and 28 required more than one course of penicillin. The results of tests became positive up to intervals of three months (Table VIIIB); this indicates the need for observation for at least three post-menstrual smears. Many of the patients who gave positive results after one or two negative results admitted intercourse during treatment, and probably many other relapses were due to the same cause.

TABLE VIIIA.

Courses of Penicillin Treatment Required (287 Cases).

Number of Courses.	Total Number of Cases.	No Local Treatment.
One	259	21
Two	22	4
Three	6	—
Percentage having more than one course ..	9·7	16

TABLE VIIIB.

Analysis of Positive Results in Smears after Penicillin Treatment.

Time of Positive Findings.	Number of Cases.
Two to four days	5
First post-menstrual smear	14
Second post-menstrual smear	16
Third post-menstrual smear	4

We now come to an analysis of the results of penicillin treatment, as compared with the other methods of treatment. Table IX indicates the effect of penicillin on the time taken to produce the first permanent "negative" smear. The forty-eight hour results are placed for comparison in the "up to two weeks" column. The figures in parentheses denote some cases in which treatment was instituted on a positive result obtained elsewhere without a confirmatory test made at the Rachel Forster Hospital before treatment, so that the first test made here gave negative results. Now that all smears are examined at the hospital, all patients have one or more confirmatory smears examined at the clinic before penicillin is given. The analysis is made in months to facilitate comparison. In the "local" group, the cases are spread out up to the fifth month with a peak at two months. One patient, who attended regularly, took over two years for her smears to become "negative"; during which time she had vaccines and protein shock therapy in addition to the other extensive treatment. In several cases in which local treatment had

TABLE IX.

Duration of Treatment up to First Permanent "Negative" Smear.

Method of Treatment.	Period of Treatment.										
	Up to Two Weeks.	One Month.	Two Months.	Three Months.	Four Months.	Five Months.	Six Months.	Six to Twelve Months.	One to Two Years.	Over Two Years.	Total.
Local	86 (23)	124	205	193	157	70	56	139	23	1	1,054
Sulphonamide	258 (20)	357	209	113	54	28	23	44	7	0	1,093
Penicillin	253	10	8	7	7	1	1	0	0	0	287

TABLE X.
Duration of Attendance After Commencement of Treatment.

Method of Treatment.	Period of Treatment.							
	Up to Two Months.	Three Months.	Four Months.	Five Months.	Six Months.	Six to Twelve Months.	One to Two Years.	More than Two Years.
Local	4	24	62	85	112	569	185	12
Sulphonamide	49	251	247	190	128	208	20	0
Penicillin	14	134	70	33	15	21	0	0

been given for several months without improvement and then sulphonamide used, the condition cleared up as in any other case in which the sulphonamides were used. In the sulphonamide-treated group, smears from more than two-thirds of the patients had become "negative" in two months, and only a small proportion required more than twelve months' treatment. Once again, some of the patients resistant to the sulphonamides responded easily to penicillin. In the penicillin-treated group, about 80% of the patients gave negative results in less than two weeks. Resistant patients are considered to be those requiring more than two courses of penicillin, and so far no patients have required more than three courses of penicillin (see Table IX).

Duration of Treatment.

The duration of treatment for the different methods is compared in Table X. In each case, when sulphonamide or penicillin was used for a patient previously treated by another method and still infective, the calculations are made from the time of commencement of the new method. Whereas in the "local" group three-quarters of the patients attended for more than six months, and many for more than one year, the greatest number are now discharged from the clinic in less than four months; in actual fact the longest attendance was nine months, by a patient who attended irregularly. The group discharged in less than two months is made up of children, of women who had more frequent menstrual periods, and women who were not menstruating either owing to pregnancy or from some other cause, and upon whom tests were made at more frequent intervals after provocative treatment to the cervix and urethra. In the case of pregnant women it is often desired to complete treatment before confinement, and these patients are sometimes given a 200,000 unit course followed by more frequent tests.

The "local" group also covers the period of the financial depression, when many of the women attending were destitute and living only on food relief. Better living conditions and higher wages during the war may be an important contributory factor to an increased natural resistance in the "penicillin" group.

Incidence of Relapse.

In examining the incidence of relapse, I have considered the cases in which the results of tests became positive after having previously been negative, and not the actual number of relapses, which could be compared only under very ordered conditions—as, for instance, in the "penicillin" group, in which tests are made after every menstrual period. In the "local" group, tests were made only when some improvement was noted, and results may have been negative several times if the tests were made earlier. When comparisons are made in this way (see Table XI), it can be seen that in the "penicillin" group the patient is much less likely to relapse. Since the main reasons for relapse are, in addition to a possible true resistance to treatment, a further exposure to infection or flare-up by continued coitus, the presence of a chronic deep-seated focus, or failure of any method actually to reach the area of infection, it is obvious that the method of administration of penicillin, and its effects in reducing the time taken to complete treatment, will naturally reduce the incidence of relapse.

TABLE XI.
Incidence of Relapse following Treatment.

Method of Treatment.	Number of Relapses.	Relapse Rate.
Local	137	13·0%
Sulphonamide	138	12·6%
Penicillin	30	10·4%

Incidence of Complications.

In Table XII I have compared the complications manifested during treatment. I have endeavoured to omit any complications which were in evidence before treatment, unless they flared up during treatment, as most of them did. One of the most striking comparisons is the high rate of pelvic inflammation in the "penicillin" group. Among the cases of pelvic inflammation are included salpingitis, pelvic abscess, pelvic peritonitis and menorrhagia. The patients treated with penicillin mainly show menorrhagia and mild salpingitis; but as they are under observation for a much shorter period of time than the others, it is difficult to estimate the amount of permanent damage that is done.

The high incidence of rectal infection in the "sulphonamide" and "penicillin" groups, which is probably more a manifestation of infection than a complication, is most likely due to the increased attention paid to this form of infection, rather than to an actual increase in occurrence. In a proportion rectal smears give positive findings even when no positive results can be obtained from the urethra or cervix (see Table XIII). Some of these rectal infections were apparently truly resistant to sulphonamides. Of all the patients resistant to sulphonamides, sixteen had a persistence of rectal infection only, after smears from the

TABLE XII.
Incidence of Complications During Treatment.

Method of Treatment.	Complication.							
	Pelvic Infection.	Rectal Infection.	Bartholin's Abscess.	Arthritis.	Venereal Warts.	Urethral and Bladder Disorders.	Perianal Abscess.	Recto-vaginal Fistula.
Local	135 (12·8%)	104 (9·9%)	83	7	10	18	6	1
Sulphonamide	95 (8·7%)	275 (25·1%)	80	12	19	6	0	0
Penicillin	32 (11·5%)	55 (19·1%)	5	2	2	0	1	0

Table XIII.

Cases of Rectal Infection.

Method of Treatment.	Total with Positive Rectal Findings.	Positive Rectal Findings Only.	Total Relapses.	Relapses Due to Rectal Infection.	Cases of Resistance.	Resistance Due to Rectal Infection.
Local	104	1	137	20	—	—
Sulphonamide	275	10	138	34	55	16
Penicillin	55	7	30	4	28	4

urethra and cervix had yielded negative findings, and of 28 patients resistant to penicillin, four had persistent rectal infections. I have considered sulphonamide-resistant patients to be those requiring more than three courses of sulphonamides, and penicillin-resistant patients to be those who required more than one course of penicillin. In spite of the cessation of local rectal treatment, the incidence of persistent positive findings in rectal smears is lower in the "penicillin" group.

The troublesome bladder and urethral complications, such as cystitis, skenitis and urethral stricture, no longer present the difficulty they did and have disappeared as complications in the "penicillin" group.

Associated Conditions.

Table XIV indicates the incidence of other conditions occurring with the Neisserian infection. The high incidence of *trichomonas vaginitis* with monilia infections in the "sulphonamide" and "penicillin" groups is probably due to the closer attention paid to any discharge persisting after treatment has been instituted. These infections are treated at once, and the attendance at the clinic is usually not greatly prolonged. Trichomonas infections are not regarded as true venereal infections; but there has lately been considered to be some connexion between infections in males and females.(1)

The association of chancres with a Neisserian infection brings up an important question with regard to the use of penicillin in the treatment of early syphilis. To what extent is the administration of penicillin to patients suffering from gonorrhœa likely to mask the appearances of early syphilis? In the "sulphonamide" group one patient developed a chancre at five weeks; all the others were present at the time of examination. The patients all have a smear examined for spirochætes if the appearances are at all suspicious. The dose of penicillin is by no means adequate to cure syphilis; the danger lies in the fact that it may be enough to mask the early chancre or delay its appearance. At the clinic we have had no cases of delayed appearance of the chancre; but at the Board of Health Clinic, one patient developed a chancre at sixty days, which was considered to be a delayed reaction due to the inhibiting action of penicillin, and not due to a reinfection. The second blood test will prevent any such infection from being missed, provided enough time has elapsed to allow the Wassermann test to produce a positive reaction, and in this respect women are better protected than men, owing to the longer observation period.

The following is the typical clinical history of a sulphonamide-resistant patient who responded to penicillin.

Patient D.H., aged forty-three years, first attended the clinic on October 22, 1943, with an infection of probably one month's duration. The Wassermann test and the gonococcal complement fixation test both produced negative results, urethral and cervical smears yielded positive findings, and a rectal smear gave negative findings. Treatment was commenced with one course of "M & B 693", followed by one course of sulphanilamide, and she attended the clinic twice a week for local treatment. Smears taken on November 9, 1943, and November 30, 1943, gave positive findings. On December 14, 1943, she was given one course of "M & B 760" and a course of weekly "Gonoderm" injections (vaccine) was commenced; altogether eleven injections were given. On January 24, 1944, rectal smears gave positive findings, and a second course of "M & B 760" was commenced. On February 1, 1944, urethral and cervical smears gave positive findings, and on February 15, 1944, a second course of sulphanilamide was given. On February 24, 1944, and March 23, 1944, rectal smears only still gave positive results. "M & B 693" local treatment to the rectum was commenced, one tablet being inserted morning and night. On April 18, 1944, a rectal smear only still gave positive findings, and the number of tablets was increased to two morning and night. On July 5, 1944, the rectal smear only still gave positive findings after nine months. One course of penicillin treatment was given on July 8, 1944. On July 10, 1944, examination of post-menstrual smears gave negative results. The next smears on August 8, 1944, all gave negative findings, and the patient then defaulted and was not examined again for five months; but no further "positive" smears were obtained.

The Future of Penicillin in the Treatment of Gonorrhœa.

Penicillin has truly ushered in a new era in the treatment of gonorrhœa. We must now consider what ill effects may arise from its use.

Apart from the flare-up of pelvic symptoms after penicillin treatment, there appear to be as yet no toxic results or ill effects arising out of the administration of penicillin. The question of its possible effect on early syphilis has been briefly discussed.

The main ill effects of penicillin would appear to come from its abuse. Penicillin may produce clinical improvement and a false sense of security in patients still infective, unless they are carefully controlled. The routine examinations are most essential. The need for regular examination of smears brings up the question which was recently raised in a daily newspaper: Why do results of pathological examinations take so long to return from the Board of Health? The answer to this probably lies in the proposals of the Section of Pathology and Bacteriology of the New South Wales Branch of the British Medical Association, outlined in a recent issue of The Medical Journal of Australia—a State-wide pathology service.(2)

We have seen that the incidence of defaulters has fallen in the "penicillin" group. Most patients accept readily the fact that, although their smears are "negative", they must still return for tests and treatment. There does exist a black market in sulphonamides, and there is a similar possibility in the case of penicillin.

The social danger of penicillin is the result of the removal of the fear of infection, if this does exist to any great extent. We have still to see whether the ease of

Table XIV.

Conditions Associated with Gonorrhœal Infections.

Method of Treatment.	Total Cases of Syphilis.	Chancre.	Total Cases of Pregnancy.	Miscarriages.	*Trichomonas Vaginalis* Infections.	Monilia Infections.
Local	52	7	28	4	8	5
Sulphonamide	38	7	30	10	126	36
Penicillin	4	1	8	4	39	4

cure produces an increased disregard for the risk of infection. The problem of gonorrhœa is not only purely medical, but also social, and medical practitioners must play as important a part in the one field as in the other. With us lies a great power for instruction and rehabilitation of the girls in our midst who are unfortunate. In this post-war era we must not make the same mistakes as last time. Treatment has advanced tremendously since then, but much of our legislation remains unaltered. The National Security Regulations are only temporary, and reforms are needed in our venereal diseases acts. The medical profession has the necessary knowledge and experience to cope with these problems.

Briefly the results of penicillin therapy can be summarized thus: (i) reduction in the frequency of attendances necessary and more convenient methods of treatment; (ii) diminution of the period of infectivity; (iii) reduction of the period of attendance at the clinic before discharge: (iv) reduction in the rates of relapse and default from treatment; (v) reduction in the incidence of disabling complications, except for a doubtful effect on pelvic complications.

Acknowledgements.

I wish to thank Dr. Mary Puckey, of the Rachel Forster Hospital, for permission to use the records of the clinic and for much helpful advice, and Dr. J. Cooper Booth, of the Board of Health, for permission to use some of the State statistics and for advice and help in compiling this paper.

References.

(1) F. L. Lydon: "Trichomonas Vaginalis Infection in the Male, *British Medical Journal*, September 22, 1945, page 384.
(2) "A Pathology Service for New South Wales", The Medical Journal of Australia, September 15, 1945, page 341.

THE REHABILITATION OF WAR NEUROTICS.[1]

By C. M. McCarthy,
Sydney.

"This Committee is concerned with the urgency and extent of the problem of mentally handicapped discharged personnel." This is the text of a resolution adopted by representatives of the Returned Sailors, Soldiers and Airmen's Imperial League of Australia, of the Trades and Labour Council and of the New South Wales Branch of the British Medical Association.

Rehabilitation in general is a political and social problem. The rehabilitation of war neurotics is a special problem of social and medical importance. It is time that, as an organized profession, we set about discussing it and finding a practical solution. The rehabilitation of ex-service personnel with persistent symptoms of neurosis is but part of the problem of coping with the great and rising incidence of neurosis in the community. We no longer speak of war neuroses, but rather of the neuroses of war, in an attempt to emphasize that the illness is essentially no different from that occurring in civilians who were not subjected to the emotional stresses of service conditions.

Neurosis is an illness with positive signs and symptoms. The diagnosis is not made by exclusion of physical causes. It is necessary to restate this fact to combat the attitude of contempt and indifference so often encountered by those whose aim is to provide adequate facilities for treating the neuroses in ex-service personnel and in civilians. The "pathology" or psychodynamics of the neuroses of war—the reasons why service personnel develop neuroses and why the symptoms persist during service and after discharge—has been exhaustively presented in the Beattie-Smith lectures of 1944 by Lieutenant-Colonel A. J. M. Sinclair.

It is here contended that the treatment of the neuroses should command the attention and intensive application of medical men to the same degree as any surgical or medical disease. No adequate practical attack on this problem has been made in Australia.

It is readily conceded that the ex-service man or woman who is ill deserves the best treatment medical knowledge and facilities can supply. For surgical and medical diseases the standard of treatment is admittedly good. For illness originating in persistent emotional disturbance, but still an illness no less real than a surgical or medical disease, treatment facilities are inadequate. The impression that the service man or woman who develops a neurosis is poor material anyway, that sympathy and even recognition only reinforce symptoms, and that a monetary encouragement, to retain symptoms in the form of a pension, must be avoided, is expressed in an attitude of over-compensation which has resulted in inactivity, an inactivity which cannot be glorified as masterly.

Everyone recognized the difficulties of physical and emotional adjustment encountered in the process of making civilians into efficient units in the services. It is obvious that any man or woman who has been in the services will find physical and emotional adjustment necessary on return to civilian life. Many of those released from the services were civilians in the full meaning of the word before enlistment. Many others have never occupied the place of grown-up men and women in the community. This process of becoming a civilian, either again or for the first time, is generally called rehabilitation.

In most discussions on the subject total emphasis is laid on occupation—a job for the service man, preference in employment. Not so much emphasis is placed on the type of work—work in keeping with the service man's aptitude and of his own choosing. A much quoted standard of successful rehabilitation is stated as follows: "The soldier's ability to return to and continue in a civil occupation without a pension." This standard is far from adequate as an indication of successful adjustment to civilian life, inasmuch as it ignores emotional adjustment in the social and domestic spheres.

Rehabilitation is not just a problem in economics. It is the subject and not the job that is to be rehabilitated. If we are to claim any advance on the methods employed after World War I, successful rehabilitation must comprehend a larger task than placement in a job. Attention must be given to the subject's interests and emotional life. The fundamental viewpoint accepts the subject as primary, his wants, interests, needs and capacities being the building stones with which to construct the edifice of rehabilitation. Many efforts fail because they are based on what is held to be good for the soldier rather than upon a careful evaluation of what the soldier wants and will accept.

Even in the field of placement in a job, the physically and emotionally handicapped ex-service man or woman is not given special consideration. There is nothing comparable with the scheme already implemented in Great Britain. The following are features of this scheme: (i) a disablement register for all disabled persons; (ii) a sheltered occupations register, positions to be filled only by persons on the disablement register; (iii) subsidized sheltered industries for the employment of personnel considered permanently subefficient.

Aubrey Lewis has written as follows: "It is easier to remember that illness can prevent work than that work can prevent illness—if only the work is well chosen." Work as a curative agent in the neuroses is accepted by all interested in the problem; but the work must be acceptable to the man in accordance with his aptitude and desires. Even if the man with persistent emotional disturbance is capable of full-time employment under existing competitive industrial conditions, and is fortunate enough to be placed in the ideal job, supervision and encouragement by an industrial welfare officer, social service worker or medical practitioner should be available.

Reconditioning centres have been advocated for those in whom emotional disturbance prevents full-time employment. Such centres would provide physical culture, occupational therapy, elementary trade training, gardening,

---

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on April 26, 1946.

AN EFFICIENT INTRAMUSCULAR ARSENICAL

TRADE MARK **Acetylarsan** **BRAND**

DIETHYLAMINE ACETARSOL SOLUTION

In the treatment of syphilis in all stages 'Acetylarsan' presents many advantages over those preparations designed for intravenous administration.

'Acetylarsan' is a ready prepared solution of a pentavalent arsenical for intramuscular or deep subcutaneous injection and by these routes is much better tolerated locally than are the trivalent arsenicals. Its administration in appropriate dosage has been reported to lead to the disappearance of spirochaetes from the chancre in six to twenty-four hours, the healing of the primary lesion within twelve days, and of mucous patches of the tongue and lips within ten days.

Supplies:

SOLUTION FOR ADULTS:
- (each c.c. contains 0.05 gm. of arsenic)
- Boxes of 10 x 3 c.c. ampoules
- Single ampoules of 5 c.c

SOLUTION FOR CHILDREN:
- (each c.c. contains 0.02 gm. of arsenic)
- Boxes of 10 x 2 c.c. ampoules

MAY & BAKER (AUSTRALIA) PTY. LTD., Sydney
Distributors for MAY & BAKER, LIMITED, Dagenham, England

8089

DOSAGE MEASURED IN HUNDREDTHS OF A MILLIGRAM

A new addition to the posology of oral estrogens

ESTINYL
(ethinyl estradiol)

ESTINYL is the new unique oral estrogen — a derivative of the ovarian follicular hormone, alpha-estradiol. It is the most potent oral estrogen known and is extremely well-tolerated. In therapeutic dosage, undesirable side reactions are uncommon.

ESTINYL is economical and within the means of every patient.

Indicated in the menopause and other estrogen-deficiency states.

ESTINYL is available in tablets of 0.05 mg. Packages of 15, 30, 60 and 150.

MADE IN U.S.A. BY SCHERING CORPORATION, BLOOMFIELD, NEW JERSEY
SOLE DISTRIBUTORS FOR AUSTRALIA
Schering Pty. Ltd., ***Australia House, Sydney, N.S.W.***

‘REDOXON’

Vitamin C after Prostatectomy

After operation upon the prostate, in order to minimise respiratory involvement, patients were treated with vitamin C 25 mg. four times daily. The results were startling and rapid, for usually within 24 hours there was reduction in temperature, in cough and expectoration, and in a series of 40 patients so treated, no death occurred from this often fatal post-operative complication (*J. Urology*, 1944, *52*, 566).

‘Redoxon’ tablets of 50 mg. are recommended for therapeutic use. For parenteral administration, ampoules of 100 mg. and 500 mg. will shortly, again be available.

ROCHE PRODUCTS LIMITED, WELWYN GARDEN CITY, ENGLAND
Sole Agents in Australia :
F. H. Faulding & Co. Ltd., 98, Castlereagh Street, Redfern Park, Sydney, N.S.W.
Scientific Representative in Australia: Mr. J. TRAHAR, Ph.C., 3 Edwards Bay Road, Balmoral Heights, Sydney, N.S.W.

outdoor and indoor recreation, social service supervision and psychotherapy. The Royal Australian Air Force and the Australian Army Medical Corps successfully operated centres which correlated the techniques of the psychiatrist, the psychologist and vocational and recreational specialists.

For the ex-service man who is not making a satisfactory adjustment in the occupational, social or domestic spheres, the Australian Red Cross Society is making an earnest effort to provide adequate reconditioning facilities at the "Gibulla" rehabilitation farm, situated forty miles from Sydney. The resident manager and his wife are particularly suited to the supervision of the patients, and a social worker and psychiatrist visit the centre for a full day once a week. The accommodation, climate and environment are ideal and the recreational facilities varied and adequate. "Gibulla" is a good working model of the essential features of a reconditioning centre.

Annexes to factories with subsidized employment for the subefficient are a feature of the British scheme for rehabilitating the physically and emotionally handicapped. Work is treatment, and in any practical scheme for rehabilitating ex-service personnel with persistent neurotic symptoms, a close liaison must be maintained between the medical advisers and the organizations of employers and employees.

A question may be asked at this stage: Are the numbers of ex-service personnel who make a slow or bad adjustment in the occupational, social or domestic spheres worth worrying about?

Colonel A. Graham Butler, in "The Australian Army Medical Services in the War of 1914-1918", states that mental conditions overshadow all others among causes of disability during and after World War I. Neurosis was undoubtedly the greatest cause of long-term casualties in World War II. After his experience with troops evacuated from Norway and Dunkirk, T. A. Ross prophesied that this would be a "dyspeptic" war. The prophecy proved true. It was interesting to read the report of a recent conference of industrial welfare workers that the commonest cause of absenteeism in industry is dyspepsia. Many of you will have studied surveys on dyspeptic service men in Britain, United States of America and Australia. With amazing agreement these surveys reveal organic disease in less than 5% of personnel whose main complaint was of dyspepsia for a period of at least six months.

It can be stated with certainty that a large number of neurotic casualties have already returned to civil life with symptoms only superficially or partly remitted. In addition, large numbers have been discharged with a physical diagnosis, but the real basis of their illness is emotional. The psychosomatic nature of a proportion of medical, surgical and orthopædic casualties is seldom considered.

The incidence of "post-war" neurosis increases the scope of the problem. Many demobilized men and women think and feel that they have returned to an unfriendly environment. They are embittered, disillusioned, insecure and hostile. If the ex-service man finds that his service and sacrifice are "debunked", if he cannot preserve his feeling of personal value, "post-war" neurosis will be an even greater problem than the neuroses of war. Emotional dissatisfaction and threats to self-respect will force ex-service men to seek community of interest with other ex-service men. Any such segregation would be an indication of their failure to become civilians. Ex-service men's organizations have a valuable place in the community, but they should never be the only places where ex-service men can find understanding and a community of interest.

Follow-up surveys of men discharged from the services with a diagnosis of neurosis are appearing in the journals. Such a survey is in progress in Australia, but it is not yet completed. A small illustrative survey in South Australia has been published by Captain W. A. Dibden. The impression gained to date, however, corresponds with the conclusions of a survey in Britain: "The men had gone downhill as a group, were less usefully employed than before, less contented, less tolerable to live with, less healthy."

All psychiatric opinion is opposed to the granting of pensions to those whose illness is basically emotional in origin. It is heartening to note that lay organizations are now accepting this sound principle. On the other hand, to quote Captain Dibden, "neglect will not cure".

Discharged service men are naturally consulting their private doctors. As these practitioners must rely entirely on the patient's story, and have no access to service medical records, the advice in many cases is most damaging. Dyspeptics are having tests repeated and diets and medicines prescribed; "effort syndrome" patients are being rested in bed for as long as three months; sufferers from post-traumatic headache are being protected and restricted in their activities. The general practitioner with a psychosomatic outlook could give immense assistance in coping with the problem of neurotic ex-service personnel.

Owing to the provisions of the act under which it works, the Repatriation Commission grants entitlement to treatment to a small percentage only of neurotics. It is being advocated that acceptance for service should be an entitlement to treatment. The opinion, only partly true, that most service neurotics would have reacted to maladjustment in the civilian sphere sooner or later should not debar from adequate treatment men and women whose illness was precipitated by emotional stress during service. All neurotics, ex-service and civilian, are entitled to adequate treatment.

Apart from the out-patient facilities provided by the Repatriation Commission, ex-service neurotics have to rely on the already overcrowded out-patient departments at civilian hospitals. In this State limited in-patient accommodation is available at the Royal Prince Alfred Hospital and at Broughton Hall. Private hospital accommodation for the emotionally ill is almost non-existent.

Neurosis in the community is a widespread and disabling illness. Expansion of present facilities for prevention and treatment is an urgent necessity. The ideal general hospital would provide adequate out-patient and in-patient accommodation for patients with neurotic and psychosomatic disorders. It will be many years before this ideal can be achieved in Australia—the psychiatrists will be the last to obtain beds in general hospitals. To quote from a report by Lieutenant-Colonel A. J. M. Sinclair:

> The lack of appreciation of the necessity of facilities for such treatment is due in part to the small number of physicians properly trained in psychological medicine, to inadequate education in psychological branches of medicine among medical students, and also to a state of profound unenlightenment amongst many responsible public bodies. The principles of treatment of the psychologically disordered differ in some respects from the treatment of physical ailments insofar as the treatment includes not only medical care and supervision, but proper social and industrial re-alignment in those affected. Any consideration of plans for treatment must therefore include plans for improved medical, social, psychological and industrial co-operation.

The only practical approach seems to lie in the establishment of a separate psychological clinic in each State. Created primarily and promptly for the treatment of the large numbers of ex-service personnel with persistent symptoms of neurosis, these clinics could be expanded to deal with psychological disorder in the community. The main object of this paper is to present this plan for your consideration.

An investigation in England revealed that less than 25% of patients from a large general hospital were cured. There can be no doubt that unrecognized and untreated emotional disturbance is largely responsible for the poor result. "Dyspepsia" alone is a challenge to the medical profession. The psychosomatic approach must prevail in all branches of medical practice.

In summary, large numbers of ex-service personnel are failing to make a satisfactory adjustment in the occupational, social and domestic spheres. Some of these were discharged from the services with symptoms of neurosis only superficially or partially relieved. Others were discharged with a physical diagnosis, but their real disability is emotional. Many others, including recovered personnel, did not develop overt neurosis while on service, but are breaking down because of lack of adjustment to psychological, social and industrial hazards.

Existing facilities for treatment are inadequate. Apart from a humane interest in the subject, the welfare of the community must be served by salvaging ex-service personnel with persistent neurotic symptoms and reduced efficiency. Neurosis in the services is regarded as an "infectious disease". It is equally infectious in the civilian sphere, inasmuch as the neurotic adversely affects those among whom he lives and moves.

Treatment facilities must be provided promptly. The problem of ex-service personnel, partially or totally disabled by persistent emotional disorder, is urgent and extensive. Only a small percentage are entitled to treatment from the Repatriation Commission. The out-patient departments of civilian hospitals cannot cope with them. Separate clinics for counselling and psychotherapy appear to be the only practical solution.

Let me conclude with a question: As medical men, do we acknowledge any obligation to the demobilized service man and woman over and above the duty of the individual citizen?

THE REHABILITATION OF WAR NEUROTICS.[1]

By H. HASTINGS WILLIS,
Senior Medical Officer, Department of Repatriation, Sydney.

WHEN I was asked by the Section of Medicine to follow a psychiatrist this evening with some remarks on the rehabilitation of war neurotics from a general practitioner's point of view, I had some diffidence in accepting the invitation. Firstly, I feared that by provocative remarks I would upset the customary serenity of a British Medical Association meeting and, in the second place, my close association with such work, over more than twenty years, unfits me to speak dogmatically with assurance on the subject.

For the onlooker sees most of a game. I have been deeply involved in this game—a sort of football scrum in which I have been bumped and knocked about, sometimes accidentally, sometimes intentionally, and bespattered with mud. This colours my outlook on the problem.

When I spoke in this hall six months ago to a gathering of psychiatrists, I was accused, in the discussion which followed, of being pessimistic and a defeatist. I trust I am not that, but I must admit that experience has dampened my early enthusiasm. I hope you will discount any pessimism in my remarks accordingly.

A further difficulty, and my most serious one, arises from the fact that I am a public servant whose duty, like that of my fellows, is to implement, not formulate, policies, and this is as much a political and social problem as a medical problem that we are to discuss. However, it has its medical aspects, which is the justification for its discussion at a medical meeting like this, and these medical aspects concern psychiatry.

Some Definitions.

Now in discussing any psychiatric problem it is as well to start with a few definitions. Psychiatrists speak a language of their own. Unfortunately, the various warring sects of psychiatrists speak different dialects and, worse still, a word may have a different shade of meaning in one dialect from what it has in another.

From the point of view of rehabilitation let us consider three terms in common use: temperament, personality and character.

Temperament.—By temperament I mean the inherited factor in mental disorder. The general practitioner and his patients have no doubt about the existence of an inherited factor in mental disorder. The psychiatrist is not so sure about it. Some will deny its existence and ascribe to parental environment what I would ascribe to heredity. Cases will be cited of adopted children who show the temperamental characteristics of their foster-parents, not of their natural parents, but, contrariwise, it is possible to show some who manifest the characters of their natural parents. It is all a matter of the relative predominance of temperament and environment. These two, in varying proportions, are responsible for personality.

Personality.—The inherited temperament of the child is modified by the stresses and strains of its early environment in such a way as to result in a personality which it now seems generally agreed is fixed before school age. As the child cannot choose its parents or its early environment, it cannot fairly be held responsible for its personality. Our legal friends have fixed the age of legal responsibility at six. Moreover, at that age a child begins his education. The effect of education upon personality results in his character.

Character.—I believe it an error of the age to minimize the importance of character in cases of abnormal behaviour. Reading through case sheets of war neurotics, I have been struck by a number of men sent to hospital for treatment of defective personality who in the first German war would have been sent to a court martial. The practice has apparently been to give the defaulter the benefit of the doubt and to ascribe his misdemeanour to defects of personality rather than to faults in character. This is in line with common usage in civil life today. Delinquency, previously regarded as due to bad character and meriting punishment, is now considered a disorder of personality to be treated in a hospital. This may be just to the individual, in some cases, but is it in the interests of the general public and the nation?

In the formation of character many educational factors play their part. The child learns at school as much from his fellows as from his teachers, and education in its widest sense goes on throughout life. The individual can and does determine to a large extent his education and, therefore, is rightly considered responsible for his character. But the earliest and more potent influence must necessarily come from his teachers, and here I would stress the importance of strong character in the teachers.

In the old days parents chose a school largely because of its masters. Schools were known as Greenway's School, Hutchin's School, Herriot's School *et cetera*, which indicated that in that age the controlling headmaster was considered the most important part of the school and parents chose for their children the school whose teachers were of strong character. For most persons today, the teacher is chosen by the State and, as far as I am aware, character is not one of the things which is taken into consideration in the selection of candidates for entry to our State teaching service. Scholastic attainments, I understand—and I speak subject to correction—are the sole criteria of suitability. Once selected for training, a student is taught how to impart knowledge rather than to mould character, and anything in the way of indoctrination it is fashionable to condemn.

I fear I am here treading on dangerous ground, for education in Australia is partly a political issue. Suffice it for me to point out that many who by strength of character served their generation well in the history of the British race, were enabled to do so because of early indoctrination by a teacher of strong character. The boy, we were told, is father to the man, and this is still essentially true, though character may continue to be moulded, even until old age.

In the rehabilitation of war neurotics my experience has been that character counts for much more than personality, and I feel that psychiatrists would get better results in their work if they paid more attention to character and less to personality which, if the dectrine underlying these definitions is true, can be but little altered, having been fixed before the age of six. A person of strong character, no matter how poor his personality, can be expected to rehabilitate himself with a minimum of assistance, but a person of poor character is a difficult person to help.

---

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on April 26, 1946.

War Neurosis.

I take it that the word neurosis is not to be used tonight in any technical sense as distinct, for instance, from a psychoneurosis or a psychosis.

The general public and the general practitioner understand by it "uncertified mental disorder", and I do not think it helpful to pander to the susceptibilities of our patients by assuring them that they are not "mental", only "neurotic". Neurosis is a mental disorder and we should be frank about it.

Medically it is generally agreed that the war neurotic does not differ essentially from the civilian neurotic. In few cases does neurosis arise directly as a result of battle stress or conditions peculiar to warfare. Most neuroses arising in the services could equally well have arisen in the same way in civil life. But politically there is a world of difference between the war neurotic and the civilian. By all means let us treat them with consideration and kindness, but firmness in dealing with war neurotics is essential. For political reasons this firmness is very difficult to maintain. The very thorough way in which neurosis was dealt with in the services during this war led some optimists to believe that there would be no neurotics to be dealt with after discharge. Things were not going to be as they were after the 1914-1918 war; things were going to be done better this time; but experience shows that the same old mistakes have been made, the same old failures of readjustment have recurred and we have with us as big or bigger problems than we had in 1920. Some of these neuroses will have first occurred on service and persisted despite treatment. Others will have been successfully treated during service, but will have recurred at varying intervals after discharge from post-war causes. Here I would mention the doctrine of facilitation. This doctrine, which was propounded by soldiers' friends after the 1914-1918 war and supported by some eminent members of our profession, is that one nervous breakdown makes a patient more likely throughout later life to suffer another breakdown from other causes. Hence it was contended that a case of neurosis occurring many years after the war from such obviously non-war causes as domestic worries or financial hardships could be regarded as due to war service if the sufferer had been treated for a neurosis on service. I do not know whether psychiatrists in general will accept this doctrine. We know that facilitation is sound doctrine in physiology. Is it sound in psychology?

Another type of case which we will meet some years after the war is that of the neurotic to whom the propagandists apply the term "delayed shell shock". Of course, it has nothing whatever to do with shells and is not shock. As we saw it in the depression of the thirties it was an ordinary sort of civilian neurosis occurring from very ordinary civilian causes, and we can fairly say that it had no relation to previous war service. But when a neurosis first occurs reasonably soon after discharge from the services, a broad view might regard the conditions of service as a factor. Many men well adjusted in civil life were unable to adjust to army conditions. Likewise, many ill-adjusted before enlistment took kindly to life in the services, but find themselves unable to readjust themselves to civil life after discharge. This type is quite common and its attributability to conditions of service is a matter which can fairly be argued.

Now a word as to "doctor-made" neurotics. As a profession we must take the blame for many cases of neurosis. Bad diagnosis or an uncertain diagnosis will often be the groundwork upon which a neurosis is built. Particularly is this the case with patients complaining of cardiac symptoms. Many a man has been made miserable for life by being wrongly diagnosed as suffering from heart disease.

So impressed have I been over the years by the harm done in this way that I say without hesitation that no diagnosis of organic disease should be made without very good cause. If there is any doubt, give the patient the benefit of the doubt and regard the condition as neurotic. I have never known of any harm coming to a sufferer from organic disease who was treated as neurotic, but I have seen a lot of miserable patients whose unhappy lot has been due to a neurosis having been mistaken for organic disease. And, of course, neurosis and organic diseases can and often do exist together, sometimes in association, sometimes as two distinct disorders, for a neurotic can suffer from organic disease as easily as a person of normal mentality.

The first World War was a cardiac war because doctors were "heart-minded". This last war has been called a dyspeptic war. The present generation of medical graduates seems to be stomach-minded. We should not blame them; we behaved similarly in our day. When, as recent graduates, we joined the services, we were sent, being young and active, to field units. We had learned for our final examinations all about the up-to-date discoveries of Mackenzie and Lewis and the insignificance of murmurs and the differentiation of cardiac irregularities. We viewed with scorn our seniors, who spoke of "those irregular hearts". We knew them as cases of auricular fibrillation, which was serious, or sinus arrhythmia, which was a "certain sign of a healthy heart", and so on. When, therefore, in a forward area the soldier presented himself on sick parade, suffering from tremor, sweating, palpitation, loss of appetite and a "churned-up feeling inside him", being cardiac-minded, we seized upon tachycardia and then by a few suggestive questions "elicited" a cardiac syndrome which we labelled "D.A.H." Likewise, in this war, the present generation, being stomach-minded, has seized upon the lack of appetite and the churned-up feeling, and by a similar process of suggestive questionings has obtained justification for a diagnosis of dyspepsia. Once diagnosed as suffering from dyspepsia, the patient went off to hospital, where specialists, more numerous in this than in previous wars, subjected him to elaborate investigation and sent him from radiologist to radiologist in the hope of finding one obliging enough to diagnose duodenal ulcer. If none obliged, the patient was labelled "functional dyspepsia" and handed over to the psychiatrist for treatment. After discharge these patients with duodenal ulcer and functional dyspepsia have come to crowd our out-patient clinics in just the same way as those with effort syndrome and other cardiac neuroses did after the first World War.

This leads us to consideration of the fixation of neuroses. General practitioners are frequently blamed by specialists for fixing neuroses. The psychiatrist likes to keep neurotic symptoms wandering. Apparently the idea is that if the symptoms shift from organ to organ they can be more easily chased away. This is probably correct, but I see some advantages in fixing neurotic symptoms on systems where they can do least harm. In this respect let us consider for a moment functional dyspepsia. I do not know whether the psychosomatic theory of the causation of duodenal ulcer has as yet received any considerable support in the profession, but I have seen some cases which suggest that a functional dyspepsia can become a case of duodenal ulcer. And these are cases in which the diagnosis has been changed, not because of radiographic shadows, but because of such unequivocal occurrences as hæmorrhage or perforation. If, therefore, a neurosis by being fixed on the stomach can result in a serious surgical catastrophe, then there are advantages in fixing a neurosis somewhere else than on the stomach.

Rehabilitation.

One hears the term rehabilitation frequently these days and its exact meaning is not clear. Purists prefer the word "reablement", and when applied to orthopædic patients this word is, I think, preferable. The neurotic, however, requires something more than reablement—restoration of working capacity. He requires to be dressed up again as a civilian. The army took him from civil life and made a soldier of him; our task is to make a civilian of him again.

The idea which underlies the term is the modern conception of a doctor's duty to his patient. It is no longer sufficient to save life and ease pain, nor even to diagnose disease correctly and to treat it. We must go further and remake our patients as happy, useful members of the community. From the patient's point of view rehabilitation is an active not a passive process. Many speak as if rehabilitation could be "pumped" into an individual while he rests at ease. Nothing is further from the truth. The neurotic must rehabilitate himself; our task is to help him.

Who are to be the rehabilitators? The psychiatrist wants to do this work, and by all means let him do it; but let him realize that he is only the leader of a band of workers, each of whom is as important as himself.

Rehabilitation and treatment should go hand in hand, not one follow the other. This cardinal error of the 1914-1918 war has been repeated in this last war. Patients have been treated in the artificial environment of elaborately equipped hospitals and on discharge have found themselves unable to cope with actual conditions of life.

For success psychiatrists must be "socially minded" and also temperamentally fitted for this work. In my experience those psychiatrists have done most good for their patients who have taken a sympathetic social interest in them as human beings, not only as interesting cases.

The second member of the team is the employment officer. His task is to find a patient work and to keep him at it. I am aware that finding employment is not the whole part of rehabilitation, but it is 90% of it. Regular congenial, remunerative employment is the main requirement of the war neurotic. To find the job is relatively easy, but to keep the man in the job is more troublesome and requires our employment officer to be something of a welfare officer as well.

The third member is the social worker. If the coal miners had allowed this discussion to take place on due date some five months ago, I should have roundly condemned social workers, as my experience of them towards the latter part of last year was rather unfortunate. I have had time to relent and on contemplation remember that for many years my colleagues and I have found it useful to obtain reports from persons we call investigators on the home conditions of some of our patients, and I am aware that for many years social workers have been employed with advantage in the mental hospitals of this State. The truth is that a good social worker is very useful, but a bad one is worthless or harmful. What, then, constitutes a good social worker? It is usual to stress the necessity for training, but I suggest that temperamental fitness for the work is of equal, or greater, importance.

The lay psychologist is usually given a place in the team. In the services he has been used as a psychometrist, and I am told was useful. He has, however, labelled as mentally deficient many indignant patients who have seemed to me quite ordinary persons. We must remember that a mental age of sixteen is equal to full adult intelligence and that a mentality corresponding to age twelve is quite enough for most occupations in life. The standard of normality seems to have been set too high.

In this city lay psychologists are increasing in number and are prepared to treat mental disorders. It would seem that psychiatrists have been carried away by modern physical methods of treatment, such as insulin therapy and electric convulsive therapy, and have tended to neglect old-fashioned psychotherapy. This vacuum the psychologist is rushing in to fill and is receiving a good deal of recognition in some quarters. For instance, I was recently asked by a well-informed layman: "Does the Repatriation Department treat its patients psychologically or psychiatrically?" If the neurotic is not given the psychotherapy he needs by the psychiatrist, he will seek it from the psychologist.

So much for the medical rehabilitation team. Outside the team there are rehabilitators who can do their part and effect more than can the team itself.

The employers and the foremen in industry need to be sympathetic toward the neurotic. I can recall many instances in which the rehabilitation of the neurotic was largely, if not solely, due to a little consideration from his superiors. Fellow workers need also to be tolerant. The worker who says that Bill is mad and should see a doctor or that he does not know why "Bill is not put off on compo., as he is only a nuisance round the place" does not help, but the worker who says to Bill, "Why don't you pull yourself together and play the game" discourages neurosis while tolerating it. A sympathetic employer and tolerant fellow workers will often do more for the neurotic ex-service man than will any medical team or government organization.

Where does the family doctor come in in all of this? At the beginning and at the end certainly, for he it is who should choose the case for the team, and it is he who must follow on the work of the team; in many cases he can be the team himself. Many neurotics do not require more treatment than simple explanation, encouragement and a little suggestion. This the family doctor is well able to give. As a social worker the doctor has unique opportunities of ascertaining the heredity, the social background and the environment of his patient.

I have no scheme of rehabilitation to put before you. This is the season for such schemes and no doubt we shall hear of many of them in the near future. I agree with the previous speaker when he says that the guiding principle of any scheme must be the need of the patient. It is a pleasant fantasy to sit in an armchair before a winter fire and conjure up grandiose schemes for the rehabilitation of neurotics, but it is a futile pastime. Let us meet the patients' need, and as patients vary, their needs will vary. If in doing so we evolve a scheme, no harm is done, for schemes are useful administratively; but any scheme to be practical must be a loose and ill-defined scheme capable of modification as required. Such schemes will not be needed to deal with all our neurotics; most of them, fortunately, will rehabilitate themselves. These are the ones of adequate character. At the other extreme there are some of poor characters, who will not cooperate and for whom little can be done. These are the ones responsible for the views of many experienced laymen that rehabilitation for neurotics is a waste of energy and public money. This certainly is true of some, but they are in the minority. Between the two extremes are those, about 20%, for whom something should be done. It is fashionable at present to urge that these be placed in institutions or farm homes. For some cases these institutions are desirable, perhaps necessary, as treatment sometimes cannot be given elsewhere.

After the 1914-1918 war rehabilitation homes were provided. Some of us who saw their activities approved of them; some were not impressed by their results. Another generation is repeating the experiment after this last war, and we shall be interested to see their results.

For myself, I prefer the out-patient clinic as the place for the treatment and management of these patients. There the patient can be treated while on his job. This is better than to attempt rehabilitation in the artificial atmosphere of a hospital or a pleasant country rest home.

Obstacles to Successful Rehabilitation.

1. Besides positive action much can be done in a negative way to help the neurotic by removing obstacles to his successful rehabilitation. The ex-service man must rehabilitate himself. Let us make it as easy as possible by removing the obstacles in his path. First and foremost of these is the well-meant but misdirected propaganda of his publicist friends.

Action and reaction are equal and oppositive, we learned at school, and any successful propaganda which secures benefits for any particular class of service man, neurotic or other, provokes a reaction of hostility, often hidden, but none the less harmful. against them. Even the preference of employment law, so generally approved, has proved a disadvantage to many able men, who have found the consequent hostility of their fellows a handicap to their advancement in life, which outweighed the benefits they derived from that legislation.

2. The attitude of the public towards neurotics is wrong. There is at present a tendency to cultivate neurosis and to exaggerate the problem of the neurotic. I heard of a captain of industry who recently said that neurosis was the greatest problem in industry today. I find it hard to believe that. Troublesome as a neurotic is, both at work and at home, nothing is to be gained by exaggeration; often a healthy disregard is the better attitude to adopt.

3. The attitude of the Press is often not helpful. Journalists seem to have an affinity with psychiatrists and their patients. We have noticed how our psychiatrists fill our medical journals with many pages of prose expressing noble sentiments in strange words and phrases. Their patients—at least when in trouble—likewise fly to the journalists. These ensure for the disgruntled an excess of publicity which satisfies their vanity, but gives them very little real help.

Pensions and Compensation.

I get a little personal satisfaction from the general acceptance these days by our profession that pensions or compensation or any other benefit are serious obstacles to the recovery of the neurotic. It was not always so. When my colleagues first pointed this out some fifteen years ago they received a good deal of abuse from soldiers' friends and uncomplimentary terms were applied to them. Since then the profession generally has had ample opportunity in dealing with claims under the workers' compensation acts of appreciating the harmful effects of money payments of all sorts in these cases. Unfortunately, the general public and our legislators are not as well aware of these harmful effects as our medical men, so the law still says that neurotics must be compensated, just as the sufferers from organic disease, if assessable incapacity is present. Thus we see the demands of the present champions of the ex-service men, that the neurotics be treated in the same way as the sufferers from organic disease, have in this respect at least been met many years ago.

The Stigma of Mental Disorder.

Let me close my remarks by asking you to consider for one moment the stigma of mental disorder, perhaps the greatest of all obstacles to the successful rehabilitation of the neurotic. It is futile to deny its existence, as some would. It is very real and has as its foundation the general public's recognition of the hereditary element in mental disorder.

It is quite easy to find many instances of patients who have refused to undergo shock therapy, for which their symptoms clamoured aloud, because of the stigma which they thought would thereby be placed upon themselves and their families.

Recently I became aware of a case in which a man's matrimonial prospects were shattered when the fiancée's relatives learned that he had been treated with shock therapy in the army. What, then, can we do to remove the stigma? The current practice is to run away from it. We see this in the demand that war neurotics should not be treated in mental institutions, but in some special institutions or in special wards of general hospitals, to which it is assumed no stigma is attached. But the patient carries the stigma with him; it is on the institution merely because of the patients in it, and wherever the mental patient is housed in any special institution or part of an institution, the stigma will come to rest. I have found it is possible to avoid it by admitting patients into ordinary wards of ordinary general hospitals, but this is not always convenient from an administrative point of view, and is considered undesirable by many psychiatrists. I suggest that those who are now trying to diffuse the stigma as widely as possible are approaching the subject from a better angle. Let us not draw fine distinctions between neurotics and psychotics; let them all be cases of mental disorder. Let the general public realize that mental disorder in some form or other is part of the make-up of each one of us. In short, let us all bear the stigma, then it will cease to be a disability to anyone.

THE DETECTION OF THE CYSTS OF ENTAMŒBA HISTOLYTICA IN THE FÆCES BY MICROSCOPIC EXAMINATION.

By A. T. H. Marsden, M.D.,
Melbourne.

In the acute stage of amœbic dysentery it is relatively easy to detect the vegetative forms of *Entamœba histolytica* in the fæces, and it is reasonable to suppose that few such cases will be missed. But when the acute stage subsides, either naturally or as the result of treatment, and conditions have become unfavourable for the further growth and multiplication of the amœbæ, those amœbæ which are deep in the tissues become surrounded by fibrous tissue and remain there inert, as may be seen in sections of amœbic granulomata, while those which are in open ulcers change into precystic forms and then into cysts which are discharged in the fæces.

To detect these cyst-passers is a different matter, because the cysts are often passed only at intervals, and even when they are present in the stool they may be present only in small numbers, and no blood and mucus are present to indicate which part of the stool to examine. Further, although the stools of patients with such chronic amœbic infections will frequently not be normal in appearance, this is not necessarily so, and in any case there is nothing really pathognomonic about them. If cysts are not seen on microscopic examination, there is no indication whether or not further stools should be examined, for erythrocytes, pus cells, epithelial cells or Charcot-Leyden crystals are not associated with the presence of *Entamœba histolytica* cysts, nor have I been able to find anything which is so associated.

It has been suggested in an American paper that the cysts of *Entamœba coli* serve as an index of *Entamœba histolytica* infection, and certainly it is my own impression that *Entamœba histolytica* cysts are more frequently associated with *Entamœba coli* cysts than with anything else; but I have never been able to find any positive correlation between the presence of *Entamœba coli* cysts and *Entamœba histolytica* cysts. For all these reasons cyst-passers may easily escape detection.

The problem of their detection was brought to my notice when I was in charge of the clinical pathology laboratory at the Nakompaton prisoner-of-war hospital, Thailand. We had in the hospital many men with amœbic dysentery under treatment, and the question arose, how many stools should be examined as one of the criteria of cure. Different authorities recommend different numbers of stool examinations for this purpose, and agree only in appearing to have no rational basis for their choice. What proportion of cyst-passers will be detected in any given number of stool examinations appears to be unknown, though there seems to be a tacit suggestion that all will be found by a few examinations, which is certainly untrue.

The same problem recurred in a slightly different form when we were asked to examine stools from men not suffering from dysentery, and without any history of dysentery, in an endeavour to ascertain the true extent of amœbic infection. The routine examination of stools of cooks raised the same question again. In both cases a certain number of cyst-passers were detected; but how many were missed, and what was the true number of chronic amœbic infections?

This problem appeared to require investigation and an attempt to evaluate the significance of a negative result. In an endeavour to do this it was decided arbitrarily to examine six consecutive stools from each patient and when sufficient data had been obtained, to submit our results to statistical analysis in the hope that some light might be shed upon the problem.

The analysis was made by Mr. H. Fairfield Smith, statistician to the Rubber Research Institute of Malaya, whom I was fortunate enough to have on my staff at the time. All the opinions and conclusions herein expressed are based on that analysis, which is printed as an appendix to this paper. As a result of this work the position has been somewhat clarified; but a full answer has not been found, and in my opinion cannot be found.

In all attempts to demonstrate an infection, the results may be considered from either of two different points of view; that of clinical medicine concerned with the individual patient or that of preventive medicine concerned with the population as a whole.

Let us take first the point of view of the clinician and consider the individual patient. Here the problem is simply this: is this patient infected or not? It seems a reasonable question; but unfortunately it cannot always be answered with certainty. The way in which the question is frequently put by both clinician and patient is: "How many negative results to stool examinations are required before we can be satisfied that there is no infection with *Entamœba histolytica*?" The answer to this is an infinitely large number, or at least so large a number as to be quite impracticable. Perhaps it would be more accurate to reply that the answer depends on the degree of infection and on the number of cysts and the frequency with which they are passed. A positive result has one simple and definite meaning; but a negative result may mean either that the patient is not infected or that the patient has a degree of infection insufficient to be detected in the number of stools examined. In this connexion it may be worth while emphasizing that in a condition in which cysts are so often passed intermittently, a considerable degree of infection may fail to be detected at a single examination. A few concrete examples may illustrate the position.

One cyst is almost certain to be seen in two stool examinations from a patient passing 1,000,000 cysts per day, while there is an even chance of detecting a cyst in two stool examinations from a patient passing 100,000 cysts per day; but to obtain an even chance of detecting even one cyst from a patient passing 1,000 cysts per day, no less than 220 stools must be examined.

The important point to realize is the limitation of stool examinations for the detection of *Entamœba histolytica* cysts and, having decided on a certain number of stool examinations, to appreciate the significance of a negative result. The number of stools to be examined should be chosen so as to give a maximum number of detections for the work involved. If an attempt is made to detect the lesser degrees of infection, the number of stools to be examined increases out of all proportion to the extra number of cyst-passers detected.

How, then, are the lesser degrees of infection to be demonstrated? Use of a concentration method for cysts or animal inoculation will help if cysts are actually present in the stool; but such patients do not excrete cysts every day, and many of the stools will not contain any cysts at all. More, therefore, is to be hoped from an intradermal reaction or a complement fixation test.

When the problem of the detection of chronic amœbic infection is considered from the epidemiological point of view, it becomes a little easier. The question now is not is this individual patient infected, but what proportion of the population is infected. If, for example, there is an even chance of detecting a certain degree of infection by a certain number of examinations, that may not give any useful information about an individual patient, but when applied to a population this "even chance" has the meaning that about half the subjects with that degree of infection will be detected. Further, if as a result of a series of such examinations a certain number of cyst-passers are detected, they will be the more heavily infected, and those who are missed, being the more lightly infected, will, other things being equal, be less dangerous.

What degrees of infection and what proportion of those degrees it is desired to detect can be decided beforehand and the number of examinations chosen accordingly. The question of what proportion of the total infected population will be detected by any given number of examinations cannot, in my opinion, be answered; the proportion must vary from time to time and place to place, as it depends on the proportions of the varying degrees of infection. At Nakompaton we examined six consecutive stools from 1,015 patients, who it was hoped had been cured of amœbic dysentery, and about 30% were found to be still infected. In this case, therefore, six consecutive examinations cannot have detected less than one-third of the true number still infected, and as it is not reasonable to suppose that all patients were in fact still infected (all the patients were clinically recovered), the proportion of infected patients detected must be higher than this; in my opinion at least half were detected. It is worth noting that two consecutive examinations would have demonstrated only about half of those found at six examinations.

From a consideration of the analysis of our results it is possible now to recommend an optimum number of stool examinations, selected for definite reasons, for the detection of chronic *Entamœba histolytica* infections. The best number is, in my opinion, four stool examinations at intervals of one week. If for any reason this is impracticable and consecutive examinations must be made, then six examinations should be made. Such a series will almost certainly detect any patient passing 1,000,000 cysts a day or more and give a three to one chance of detecting anyone passing 100,000 cysts per day, while, of course, there is a rapidly decreasing possibility of detecting lesser degrees of infection. From the epidemiological point of view practically all carriers passing 1,000,000 cysts a day or more will be detected, about 74% of those passing 100,000 cysts a day, about 12% of those passing 10,000 cysts a day, and possibly (according to the number examined) a few of the more slightly infected. The above figures, of course, are true only if a sufficiently large number of people are examined.

Conclusions.

1. Diagnosis of a chronic infection with *Entamœba histolytica* by microscopic examination of the fæces for the presence of cysts depends for its success or failure on the number of cysts passed and on the frequency with which they are excreted.
2. There is no way of detecting all chronic amœbic infections by stool examinations, and detection of any but a small minority of patients passing 10,000 cysts or less per day is impracticable.
3. Stool examinations should not be made on consecutive days, because most cyst-passers excrete their cysts for only a few days at a time and at random intervals. From this it follows that stool examinations on two or three consecutive days only do not give a true picture of the position.
4. Four stool examinations at intervals of one week are recommended as being the most efficient.
5. Examination of more than one preparation from the same stool increases the chance of detection so little as not to be worth while. I do not refer to cases in which atypical cysts are found and further preparations are examined in the hope of finding typical cysts.
6. It is emphasized that all figures given are lower limits, and better results than those quoted in the text should usually be obtained.

Acknowledgements.

I wish to take this opportunity of recording my thanks to Lieutenant-Colonel A. E. Coates, Australian Army Medical Corps, Australian Imperial Force, officer commanding Nakompaton prisoner-of-war hospital, for his constant help and encouragement to the pathology department of that hospital.

Appendix: Frequency of Detection of Cysts of Entamœba Histolytica in Stools from Patients Apparently Recovered from Amœbic Dysentery.

By H. Fairfield Smith.

I: Data.

The observations to be described were obtained in the pathology laboratory attached to the prisoner-of-war hospital camp at Nakompaton, Thailand, during the months from November, 1944, to July, 1945. In the major part (Section II (*a*) to II (*d*)—Statistical Summary) of the observations here reported, the patients were men who had suffered from amœbic dysentery sometime during the preceding two years, but had become sufficiently healthy so that it seemed possible that they might be now free of the disease. The plan was that six stools passed on successive days should be examined for each patient. For some men, however, fewer than six stools were submitted. The numbers included in this survey are shown in Table I.

Section II (*b*) includes the same series as Section II (*a*), in addition to 253 patients for whom observations were stopped when one "positive" specimen had been found. In the statistical summary which follows, adjustments have been made for the numbers which failed to be six times observed. Such adjustments are trivial, and so will not be described in detail.

Technique.—About one cubic millimetre of fæces from various parts of the stool, but principally from the surface if the stool was formed, or of blood and/or mucus if these were visible, was taken up on a bamboo stick, mixed with a drop of normal saline solution on a microscope slide and covered with a cover slip, usually about eighteen millimetres square. The whole was searched with a 2/3 inch objective and selected areas were examined with the 1/6 inch objective. Slides were recorded as showing positive results only when there could be no reasonable doubt about the species of amœba observed. The criteria principally used, in order of emphasis, were as follows: size and shape of chromidial bar, thickness of wall, size and visibility of nuclei. Occasionally iodine staining was used for observation of nuclei; but we had no facilities for fixing and staining with hæmotoxylin *et cetera* as would have have been desirable to check doubtful findings.

Comment.—Unfortunately the records are not so accurate as we would wish, because there are grounds for suspecting that some men—some who hoped to be passed as fit for work, as well as some who wanted still to appear ill—submitted stools other than their own. We believe, however, that the great majority of the specimens have been honestly delivered, and the general trend of the data, if not its details, may not be appreciably affected.

II: Statistical Summary.

(*a*) Frequencies of positive findings in the series of six stools submitted by each patient were as shown in Table II.

It was to be expected that the "6" group would be greater than the "5", because in that group occurred all those patients with so heavy an infection that cysts were observed every day, however long the series might be continued.

(*b*) The initial observation of cysts in successive specimens was as follows (Table III).

The somewhat surprising feature of these data is the equality of frequencies appearing at the fourth, fifth and sixth stools, apparently suggesting indefinite continuation of positive findings if the series was to be extended. That this is a constant feature of our data is shown by the fact that the relative figures remain approximately the same when evaluated for subsamples covering only three months.

(*c*) The observations on successive days were associated as shown in Tables IV and V.

Table IV shows the frequency with which all positive results occurred on successive days, as compared with other arrangements throughout the six stools examined. The "calculated figures" show the distribution between these two classes to be expected if the observations were distributed at random throughout the six stools.

TABLE IV.

Positive Findings.		All Results Positive on Successive Days.	Others.	Total.
Two positive results in six stools.	Observed. Calculated.	9·0 7·7	14·0 15·3	23
Three positive results in six stools.	Observed. Calculated.	10·0 5·2	16·0 20·8	26
Four positive results in six stools.	Observed. Calculated.	7·0 3·6	11·0 14·4	18
Two positive results in five stools.	Observed. Calculated.	8·0 4·0	2·0 6·0	10
Three positive results in five stools.	Observed. Calculated.	5·0 2·7	4·0 6·3	9

(5d.f.)=18·35.

There is therefore a significant tendency for persons with moderate or light infections to pass over periods of a few days larger numbers of cysts than their average.

Analogous classification of the same data with respect to association of negative findings is as shown in Table V.

This appears to indicate that the periodicity of quiescent periods is at random.

TABLE I.

Number of Patients.	Number of Stools Observed per Man.						Total.
	6	5	4	3	2	1	
Section II (*a*)	537	135	50	19	13	8	762
Section II (*b*)	665	164	60	35	37	54	1,015

TABLE II.

Positive Findings.	Frequency of Positive Findings out of Six Stools.						Total.		Grand Total.
	1	2	3	4	5	6	Positive.	Negative.	
Number	77	44	38	33	14	27	233	529	762
Percentage	33·0	18·9	16·3	14·2	6·0	11·6	100		

TABLE III.

Positive Findings.	Serial Order of Stool in which Cysts were First Observed.						Total.		Grand Total.
	1	2	3	4	5	6	Positive.	Negative.	
Number	112	65	44	27	30	29	307	708	1,015
Percentage	36·5	21·1	14·5	8·8	9·6	9·5	100		

(*d*) The associations of cysts with ancillary characters—namely, epithelial cells, pus cells, red blood corpuscles and Charcot-Leyden crystals—were as shown in Table VI.

Some negative association appears to be indicated. Deviation from random expectation is in the same direction when the data are classified with respect to only single ancillary characters, or subdivided with respect to intensity of infection (as indicated by the number of days on which positive findings were obtained). I offer no explanation.

Among patients passing both cysts and ancillary characters there is no observable tendency for both to appear either on the same or on different days.

TABLE V.

Negative Findings.		All Negative Results on Successive Days.	Others.	Total.
Two negative findings in six stools.	Observed.	7·0	11·0	18
	Calculated.	6·0	12·0	
Three negative results in six stools.	Observed.	6·0	20·0	26
	Calculated.	5·2	20·8	
Four negative results in six stools.	Observed.	5·0	18·0	23
	Calculated.	4·6	18·4	
Two negative results in five stools.	Observed.	4·0	5·0	9
	Calculated.	3·6	5·4	
Three negative results in five stools.	Observed.	1·0	9·0	10
	Calculated.	3·0	7·0	

(*e*) A few patients were observed over periods of more than six days. (i) Thirty-eight patients were observed for nine days; (ii) 29 tuberculous patients, with no known previous history of dysentery, were observed for twelve days; (iii) 36 miscellaneous patients were found to be passing cysts only infrequently, and were observed on varying numbers of days (six to sixteen), not necessarily consecutive, but spread over periods from one to six months. The results are shown in Table VII.

Only one patient, in series (ii), gave positive results on all days; the other 35 passed cysts on only one, two or three days. For these, who gave two or three positive results, the number of negative observations between two successive positive results varied from 0 to 11, with a mean of 4·5.

TABLE VI.

Presence or Absence of Cysts.	Ancillary Characters.		Total.
	One or More Observed on One or More Days.	None Observed.	
Cysts observed on one or more days	44	424	468
No cyst observed ..	75	167	242
Figures expected if association was at random ..	78·5 40·5	389·5 201·5	Deviation = +34·5
Total	119	591	710

III: Theoretical Considerations.

The outstanding problem in the class of work here reported is: "How many stools should be examined before a patient is passed as clear of the disease?" Although it is usually asked thus, the question in this form is incomplete. To obtain a reasoned answer it should be put somewhat as follows: "How many specimens, selected according to an agreed method of sampling, must be examined in order to determine with a stated probability that a patient's residual infection may be not greater than a stated intensity?" In the absence of more direct observation the criterion of infection will presumably be the average number of cysts passed per day.

Interpretation will in general be simplest when the data have been derived from strictly random samples. Two aspects of sampling have to be considered. The first is the frequency of the stools to be examined. If one wished to estimate the number of cysts being passed in a specified short period, such as a week, there would, of course, be no objection to the examination of every stool passed in that period. But that is not usually the situation. Rather one wishes to estimate the production which may be expected over a prolonged period, such as six months or a year. In view of the data presented in Section II (c), one week cannot be regarded as a random sample of a prolonged period. According to established principles of sampling, if, say, six stools are to be observed as representative of those passed in six weeks, the six days to be observed would be determined by random selection (by the drawing of lots, or from a table of random numbers *et cetera*). Alternatively, one might observe one stool per week, the particular day in each separate week being determined by lot; this might give a more accurately representative sample, but would introduce certain complications if estimates of variability and error were to be made. However, for practical convenience (for example, in directing an out-patient to come or to send specimens to the laboratory on specified days), many persons will prefer to ask for specimens at regular intervals, and in view of the findings in the second part of Section II (c), it may be anticipated that bias thus introduced should be trivial. (At the same time, strictly random sampling is not, in fact, so difficult to organize as inexperienced persons usually imagine.) But whatever properly considered method is chosen, it is to be noted for purposes of the following discussion that, although emission of cysts on successive days is not at random, randomness can be imposed on the days selected for observation.

The other aspect, the sampling of individual stools, is rather more complex. We may assume that cysts derived from ulcers high up in the colon are thoroughly mixed throughout the fæces; but those arising at the lower end, especially in the sigmoid, are likely to be more concentrated in the outer layer. This feature has not yet been adequately investigated; but the technique described in Section I above is probably satisfactory. Such observations as we have made, albeit too meagre to be worth presenting, suggest that there is little to be gained by observing more than one preparation from each stool, because the variation between stools is much greater than that between preparations from the same stool. (Random sampling of individual stools can, of course, be obtained by adding water to a suitable consistence, thoroughly mixing and taking a measured proportion. Such a procedure must be adopted if it is required to estimate the intensity of infection, but for mere detection it is not worth while.)

On the hypothesis that samples are random and properly representative of variation within stools (a questionable assumption), and if it is assumed that a man passes on the

TABLE VII.

Group of Patients.	Cysts First Observed in Stool: Number of Days.											Total.		Grand Total.
	1	2	3	4	5	6	7	8	9	14	15	Positive.	Negative.	
(i)	—	2	—	—	2	—	2	1	—	—	—	7	31	38
(ii)	2	1	—	—	2	—	—	—	1	—	—	6	23	29
(iii)	4	—	5	2	1	3	3	2	1	1	1	23	—	—
Total ..	6	3	5	2	5	3	5	3	2	1	1	36	—	—

POISON
Elixir DIOPHEN
TO BE USED ONLY UNDER MEDICAL SUPERVISION
THE HAMILTON LABORATORIES LTD
ADELAIDE · AUSTRALIA

Elixir DIOPHEN

Each Drachm Contains—
PHENOBARBITAL SOLUBLE, GR. ½
EPHEDRINE SULPHATE, GR. ¼
ETHYL MORPHINE HYDROCHLORIDE, GR. ⅛
AROMATIC BASE . . . . Q.S.

FOR THE TREATMENT OF THE COMMON COLD, WHOOPING COUGH, ALSO PERSISTENT IRRITATIVE COUGH, BRONCHIAL ASTHMA, BRONCHITIS, AND NOCTURNAL ENURESIS OF CHILDREN.

THE HAMILTON LABORATORIES LIMITED
ADELAIDE, SOUTH AUSTRALIA

A Statement of Fact —

Extract from "The Medical Journal of Australia": "Samples of Tenax Soap have been submitted to a careful investigation by our Analyst. He carried out a series of investigations with a 24-hour broth culture of Bacillus typhosus . . .

"Our Analyst expressed the opinion that it is probable that Tenax kills the bacilli in less than 30 seconds in a 10% Emulsion.

"We may thus conclude that Tenax is a satisfactory Germicidal Soap which may be recommended with confidence."

TENAX SOAP

A PRODUCT OF AUSTRALIAN SOAPS LTD.

Prutone
D·H·A

Compound chlorbutol dusting powder.
For pruritus ani, pruritus vulvae and cutaneous inflammation generally.

FELTON GRIMWADE & DUERDINS PTY. LTD.
342 FLINDERS LANE, MELBOURNE, C.1

'INFUNDIN' BRAND

PITUITARY (POSTERIOR LOBE) EXTRACT

Where pituitary extract is indicated, there is no room for doubt or guesswork; successful therapy depends upon a definite, precise response to a given dose. That is why 'Infundin' brand Pituitary (Posterior Lobe) Extract is regularly specified by an increasing number of practitioners.

'Infundin' is a product of exceptional reliability, prepared by workers with many years' experience in the technique of its manufacture and standardisation. It shares with all the products of Burroughs Wellcome & Co. a high and jealously-guarded reputation for consistent and dependable activity.

'HYPOLOID'
'INFUNDIN'
(Posterior Lobe) Ext
10 Units
Wellcome
Ltd., Sydney
Made in Australia
'HYPOLOID'
'INFUNDIN'
(Posterior Lobe)

'HYPOLOID' TRADE MARK **'INFUNDIN'** BRAND

Pituitary (Posterior Lobe) Extract

10 International Units per c.c. — 0·5 c.c. and 1 c.c., in boxes of 6, 25 and 100 ampoules.

BURROUGHS WELLCOME & CO.
(AUSTRALIA) LTD.
(Incorporated in England)
SYDNEY, N.S.W.

ASSOCIATED HOUSES: LONDON NEW YORK MONTREAL
CAPETOWN BOMBAY SHANGHAI BUENOS AIRES

TABLE VIII.

V \ k	1	2	4	6	8	10	20	40	60
10^3 ..	0·003	0·007	0·013	0·020	0·026	0·033	0·064	0·125	0·181
10^4 ..	0·003	0·064	0·125	0·181	0·234	0·284	0·487	0·736	0·865
10^5 ..	0·284	0·487	0·736	0·865	0·931	0·964	0·999	—	—
10^6 ..	0·964	0·999	—	—	—	—	—	—	—

average 300 millilitres of fæces per day, of which one cubic millimetre is microscopically examined, then the probability of detecting a single cyst at any one examination is as follows: $p = 0{\cdot}001/300 = 0{\cdot}\dot{3} \times 10^{-5}$. Suppose further that the patient passes r_i cysts on the ith day of observation; $i = 1, 2, \ldots k$; then the probability of failing to observe at least one cyst in k specimens is as follows: $Q = 0{\cdot}999996\ (n_1 + n_2 + \ldots k) \longrightarrow 0{\cdot}999996^{kv}$, where v is the average number of cysts per day passed by the patient; and the probability of observing one or more cysts in k specimens is as follows: $P = (1 - Q)$. Table VIII shows P for $k = 1$ to 60, and for $V = 1{,}000$ to $1{,}000{,}000$.

For small values of P, say less than 0·1, the change for a variation in the proportion of fæces examined from, say, one-third to two times the above proportion—that is, for $p^1 = 0{\cdot}1 \times 10^{-5}$ to $0{\cdot}7 \times 10^{-5}$—the revised value of P may be taken to a first approximation as $P^1 = P_p{}^1/_p$; but for P greater than 0·1, or for greater variations of the proportions sampled, revised calculations from the above general formulæ would be advisable.

It follows from Table VIII that to obtain a 50% probability of observing at least one cyst it would be necessary, by means of the methods outlined above: (i) from a patient passing an average of 1,000 cysts per day, to observe about 220 stools; (ii) from a patient passing an average of 10,000 cysts per day, to observe about 22 stools; (iii) from a patient passing an average of 100,000 cysts per day, to observe about two or three stools. From a patient passing on an average 1,000,000 cysts per day, examination of two stools may be expected to give almost certain detection, the probability of failure being only 0·001 (or in other words, one chance in a thousand).

It has been pointed out above that the sampling of stools can be arranged to conform with the hypothesis underlying this table. The sampling within individual stools may not so conform; inasmuch as the technique described above may be expected to err on the side of increasing the probability of detection, as compared to a strictly random sample, the table may be supposed to show lower limits for the probabilities of detecting given infection intensities with varying numbers of specimens.

Consideration has been given to the possibility of empirically estimating from the data the proportion of carriers undetected in varying numbers of examinations. All such attempts must, however, involve extrapolation, and it seems quite impossible to derive any theoretically valid curve which could give estimates sufficiently dependable for serious consideration.

Summary.

The paper describes observations made at Nakompaton prisoner-of-war hospital in Thailand on the frequency of observation of cysts of *Entamœba histolytica* in stools from patients convalescent after amœbic dysentery.

Table III in Section II (*b*) shows the numbers of cyst-passers detected on each of six successive days when stools were examined. There appears to be no way of deducing from these data how many carriers would be missed in an examination of any given extent. Observations on successive days are correlated, so that an examination covering only two or three successive days cannot be considered as representative of the patient's average cyst production.

In Section III principles of sampling are discussed, and it is shown how, if random sampling is assumed, the probability of detection may be estimated for varying sizes of sample taken from patients with varying intensities of infection.

Acknowledgements.

The observations were made by Major A. T. H. Marsden, Royal Army Medical Corps, and myself. Our thanks are due to L. R. Davidson and F. E. Drion for assistance in preparing specimens and recording the data.

Reviews.

PROGRESS IN NEUROLOGY, PSYCHIATRY AND ENDOCRINOLOGY.

THE publishers of the practical medicine series of year books combine neurology, psychiatry and endocrinology in one volume. The volume for 1945 dealing with these subjects is a worthy successor to those of previous years.[1]

In the preface of the part dealing with neurology, the editors, Hans H. Reese and Mabel G. Masten, discuss the scope of a neurologist. They hold that a neurologist is a student of the development, integrated functions and disintegrated pathology of the nervous system, who after acquiring a sound general medical education and a background of science has become a physician. A neurologist, they state, must remain abreast of the literature and of the research achievements in anatomy, physiology, biochemistry and pathology; he must be familiar with neurosurgical advances. He must be able to evaluate human relations, behaviour and the principles of dynamic psychology; he must apply psychotherapeutic procedures, without which no physician can practise medicine. There are few sharp borders to be drawn between the closely related clinical fields of neurology, psychiatry and surgery, at least in practice. A neurologist diagnosing conversion phenomena must be able to explain the underlying mechanisms, just as he must differentiate and coordinate psychotic reaction types in organic cerebral lesions. The sections of the part of the work devoted to neurology are four in number: (*a*) anatomy, physiology and pathology; (*b*) epilepsies; (*c*) disorders of the central nervous system—the abstracts here are subdivided into groups according to certain types of lesion, or structure affected; (*d*) diagnostic procedures. The first thing that strikes the reader is that the abstracts are remarkably full, several pages sometimes being devoted to one. The blood supply of the nerves of the upper limb in man have been described by Sydney Sunderland, of Melbourne. The subsection on head injuries is valuable. There is a discussion on neonatal asphyxia, its encephalic residuals and the mechanism of their production. Other subjects mentioned include the disability arising from closed head injury, chronic post-traumatic head symptoms, mental symptoms following head injury and pathological changes following brain trauma. In the subsection devoted to cerebral infections many diverse subjects are included, for example, cerebral symptoms in malaria, torula infection of the central nervous system, cysticercosis, tetanus, penicillin in the treatment of brain abscess, and porphyria in relation to nervous and mental disease. In another subsection recovery from tuberculous meningitis is recorded. A long reference is made to pressure effects associated with cervical and with rudimentary and "normal" first ribs. Amimia or emotional paralysis of the face is mentioned, and a reference to "restless legs" is included.

The part on psychiatry is edited by Nolan D. C. Lewis. In his preface he refers to the influence of modern psychiatry on all branches of medicine and surgery. The sections deal with general topics, child psychiatry, schizophrenic psychoses, organic reactions, toxic psychoses, psychoneuroses and psychosomatic disorders, and military psychiatry. In the subsection on organic reactions some interesting photomicrographs are included.

The part on endocrinology is edited by E. L. Sevringhaus, who states that the question whether to relate the endocrine system to the nervous system or to nutrition can be answered only by the statement that both relationships are important, but that the endocrine organs are really related to the entire body and to virtually all physiology. The part is divided into two main sections dealing respectively with the pituitary group and a miscellaneous group of glands. The first of these is subdivided into matters related to the "posterior pituitary", the "intermediate pituitary" and the "anterior lobe"; finally there are "miscellaneous pituitary matters". The section on the miscellaneous group of glands deals with the thymus, the spleen and antihormones. In the pages devoted to the thyreoid a great deal of useful information is to be found. The drug thiouracil is discussed from several points of view. The adrenal cortex is another subject that is dealt with at some length and in an efficient way.

---

[1] "The 1945 Year Book of Neurology, Psychiatry and Endocrinology"; Neurology—edited by Hans H. Reese, M.D., and Mabel G. Masten, M.D.; Psychiatry—edited by Nolan D. C. Lewis, M.D.; Endocrinology—edited by Elmer L. Sevringhaus, M.D.; 1946. Chicago: The Year Book Publishers Incorporated. 7" × 4¾", pp. 720, with illustrations. Price: 24s.

A YEAR BOOK OF GENERAL MEDICINE.

"THE 1945 YEAR BOOK OF GENERAL MEDICINE" is divided into five parts, each of which has its own editor or editors.[1] It is one of the twelve volumes comprising the "Practical Medicine Series" of year books founded in 1900 and published continuously since then. The series is well known and needs no introduction to Australian practitioners of medicine. The articles chosen for inclusion in the year book come from journals in many different countries. Clearly the work included is not always entirely new or epoch-making—it would be disconcerting to find that the new work each year always filled a volume of approximately the same size. The work that is included, however, nearly always throws fresh light on a subject; sometimes the illumination comes from an apt remark by the editor, printed in small type at the end of an abstract.

The first part of the volume under review deals with infectious diseases and is edited by George F. Dick. The first reference is to work by an author who holds that the common cold is not caused by a virus but by a hæmolytic streptococcus. The editor properly remarks that in all probability the colds described are exacerbations of chronic nasal infection, and not colds at all. Among the other conditions discussed are dengue, hepatitis, influenza, malaria, poliomyelitis, rickettsial and virus diseases, streptococcal infections, tetanus and so on. The most important section of this part of the work is devoted to a series of articles on penicillin—its action on bacteria, methods for its estimation in blood serum and other body fluids, its concentration in blood serum after various doses given by various routes, its oral administration in oil, the enhancement of its concentration in plasma of dogs by the simultaneous administration of para-aminohippuric acid, the synergic action of penicillin and the sulphonamides, accounts of results obtained in a wide variety of infections by its use.

The part on diseases of the chest has been edited by J. Burns Amberson. In the section on function reference is made to an important article on bronchospirometry, a method by which the functions and volumes of each lung are determined separately and simultaneously. The work presented is by Pinner, Leiner and Zavod, of New York, who have attempted bronchospirometry 380 times and have obtained 270 satisfactory records. They hold that bronchospirometry is indicated whenever an irreversible operation on one lung is contemplated, in order to determine the functional capacity of the contralateral lung. Pathogenesis of pulmonary atelectasis has been discussed by R. F. Vaccarezza. Hæmothorax has been dealt with in articles by three authors or groups of authors and reference is made to the treatment of *empyema thoracis* with penicillin. In connexion with the latter the editor refers to the possibility of the creation of a permanent dead space in the pleura. A conservative view of aluminium therapy in silicosis is presented in the light of animal experiments by L. U. Gardner *et alii*. The use of penicillin in the treatment of intractable asthma is mentioned, and a useful statement on the surgical treatment of primary carcinoma of the lung is given. Twenty-eight pages are devoted to discussions on different aspects of pulmonary tuberculosis.

The part on diseases of the blood and blood-forming organs and on diseases of the kidney is edited by G. R. Minot and W. B. Castle, and covers 160 pages. The editors introduce the section on transfusion of blood and blood substitutes with an article summarizing the work of E. J. Cohn and his associates on the chemical fractionation of human plasma in connexion with a search for improved blood substitutes. They include in this section many articles dealing with Rh factors; as they remark, these give the reader a good idea of the present status of the subject. The different types of anæmia are discussed, and reference is made to the use of radioactive phosphorus in the treatment of *polycythæmia vera*. The section on agranulocytosis includes two references to this condition following the administration of thiouracil. The section on diseases of the kidney contains reference to the physiology, pathology and clinical aspects of renal disease.

The part on diseases of the heart and blood vessels is edited by William D. Stroud. The first three sections of this part deal with ætiological diagnosis, anatomical diagnosis and physiological diagnosis. In the first reference is made to such subjects as atherosclerosis, Mönckeberg's sclerosis, bacterial infection, congenital anomalies, effort syndrome, hypertension, hyperthyreoidism, hypothyreoidism, psychoneuroses, rheumatic fever, syphilis and trauma. Ligation of the *ductus arteriosus* is mentioned, and the editor states his impression that more patients are being operated on for this condition than is justifiable. Under anatomical diagnosis are included thrombosis of the coronary arteries and pericarditis; under physiological diagnosis the anginal syndrome is mentioned. Sections on electrocardiography, treatment, miscellaneous subjects and the peripheral blood vessels complete this part of the book.

The last part, on diseases of the digestive system and metabolism, is edited by G. B. Eusterman. Sections are devoted to diseases of the œsophagus and stomach, the biliary tract and pancreatic system, diseases of the small bowel and diseases of metabolism and nutrition. The frequent association of dyspepsia with active service conditions is shown by reference to an article on civilian dyspepsia. The articles on peptic ulcer in the army are full of interest. Large melena of obscure origin is discussed and mention is made of vagotomy in the treatment of peptic ulcer. An article on the conservative management of acute pancreatitis is worthy of special mention. Under the heading of diseases of metabolism and nutrition reference is made to many articles dealing with the results of vitamin deficiencies.

SEX HORMONES.

THE text of Dr. H. Burrows's "Biological Actions of the Sex Hormones" is in some respects unsatisfactory after the expectations aroused by the preface.[1] The book was designed in part to keep those occupied with other matters informed of the rapidly growing literature on sex hormones as well as to provide a reliable foundation for further research. The sections of the book are devoted to gonadotrophins, gonadal hormones, androgens, œstrogens, progestins and sex hormones of the adrenal cortex. There is also an appendix providing details of proprietary sex hormone preparations and synonyms.

As a guide for those engaged in other lines of research, the chief defect of the book is a tendency of the author to summarize findings badly and not to evaluate them. The arrangement of the sections is at times a little startling; their inactivation, for example, being the work first considered in the section on gonadotrophins.

For those working on sex hormone pharmacology and biology, the detailed compilation of data culled from a formidable range of publications will be of inestimable value. But here again serious defects occur, such as a detailed discussion on the separate identity of the interstitial cell stimulating hormone and the follicle stimulating hormone, from which the all-important work of the laboratories of Fraenkel-Conrat and Van Dyke is omitted. These workers and their colleagues prepared in 1940 chemically pure interstitial cell stimulating hormone and biologically pure follicle stimulating hormone.

The author has been associated mainly with the Chester Beatty Research Institute of the Royal Cancer Hospital, and the relations of the hormones to new growths are considered in some detail. In regard to chemical structures of the hormones, where these are known, a summary of the relevant information is given, along with references to sources of detailed chemical information. There is a very extensive bibliography and a good index. The book is very well printed and arranged.

---

[1] "The 1945 Year Book of General Medicine", edited by George F. Dick, M.D., J. Burns Amberson, M.D., George R. Minot, M.D., S.D., F.R.C.P. (Edinburgh and London), William B. Castle, M.D., S.M., M.D. (Hon., Utrecht), William D. Stroud, M.D., and George B. Eusterman, M.D.; 1945. Chicago: The Year Book Publishers Incorporated; Melbourne: W. Ramsay (Surgical) Proprietary Limited. 7" × 4¾", pp. 768, with illustrations. Price: 24s., post paid.

[1] "Biological Actions of Sex Hormones", by Harold Burrows, C.B.E., Ph.D., F.R.C.S.; 1945. Cambridge: Cambridge University Press. 9¾" × 6½", pp. 524. Price: 42s. net.

The Medical Journal of Australia

SATURDAY, JUNE 29, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE WORLD FOOD SHORTAGE.

As long ago as 1943 great concern was felt for the conditions which had to be faced by the peoples of the occupied countries of Europe in the matter of food. The situation at that time was discussed in these pages in the issue of December 4, 1943, in the light of a book, "Starvation in Europe", by Geoffrey H. Bourne. In the issue of December 18, 1943, it was possible to discuss the decisions reached at the United Nations Conference on Food and Agriculture, which had been held at Hot Springs, Virginia, in May and June of that year. At that conference it was pointed out that there had never been enough food for the health of the people of the world and that considerable expansion of food production would be necessary. In addition to the problem of the production of food, there would be the problem of its distribution. No less than forty-four governments and authorities were represented at the conference. Certain declarations, recommendations and resolutions were adopted, and these were directed towards increased production and cooperation in the distribution of food. Since 1943 the food position has deteriorated and the world is faced with a food problem of the greatest magnitude. It has been stated authoritatively that, without full and successful planning, more people may die from starvation before the end of 1946 than died from causes of war between the years 1939 and 1945. The urgency of the position is not generally recognized. Not so long ago it was pointed out in *The Times* that there has been much careless talk, even in high circles, about the "ninety days' crisis", and many people, particularly in America, believed that once the world had passed through the ninety-day period increasing supplies would be available and famine banished from the earth. "It would be difficult", we are told, "to find a statement further from the truth." The shortage of food throughout the world is certain to remain critical for four or five years.

This is not a matter that concerns certain parts of the world only. Australia has had a privileged position in the matter of food. It is true that large amounts of food have been sent from the Commonwealth to other, less fortunate, parts of the world. At the same time the question may well be asked whether most of our people understand the gravity of the situation and also whether more could not be done to send help to stricken parts of the world. In Great Britain His Majesty's Government has been concerned with the need for wide understanding of the position, because the people of the Home Land, already tried almost to the limit of their endurance, have been asked to make still further sacrifices for the suffering peoples of other countries. The Minister of Food has prepared a White Paper which was presented to Parliament in April, 1946, and has been printed by His Majesty's Stationery Office. The paper is published to set out the facts of the present crisis, to show how the crisis developed, and to trace the steps taken by the Government in the face of it. It will be well to bring to the notice of Australians the first two aspects of this White Paper.

Long before the end of the war it was foreseen that the shortage of fats, meat, dairy products and sugar which had developed during the war would remain for a considerable time after it was over. Towards the end of 1945, however, it became apparent that supplies of grain would be seriously inadequate and that it would no longer be possible to make up for deficiencies in other foods by increased consumption of cereals—the problem was no longer one of austerity, but of absolute shortage. This state of affairs arose largely from an exceptional succession of droughts in many of the world's main producing areas, coming on top of the already serious dislocation of the world's agricultural economy and trade during six years of war. The following figures are illuminating. Before the war the annual production of bread grains (wheat and rye) in Continental Europe, excluding the U.S.S.R., was 56 million tons. During last autumn the production was only 31 million tons, and a year earlier the amount produced was 46 million tons. There was a proportionately heavy fall in the production of meat and other livestock foods. This meant that the stated import requirements for the continent of Europe for the year July, 1945, to July, 1946, amounted to 15·6 million tons as compared with a pre-war import of 3·7 million tons. Even if these quantities could be obtained they would be about 25% less than those of an average pre-war year. The other deficit countries (India, China, French North Africa, South Africa and certain others) present a similar picture. In the East there has been a serious fall in the production of rice in countries occupied by Japan. In Burma and Siam production in 1946 is estimated at only 4·9 million tons against a pre-war average of 8·4 million tons. Further, in the Far East the production of vegetable oils and sugar has fallen to such an extent that relief is needed in some countries which before the war used to export substantial quantities. In addition to droughts which are described as the culminating factor in the situation (the most severe droughts have been in Europe, French North Africa, the Union of South Africa, New Zealand and India) other factors are named. Among these, in addition to the actual devastation caused by war, is the dislocation of the world's transport system as a result of war. We also read that in Australia shortage of manpower has been an important factor. Against the heavy losses there has been an increased food production in Great Britain, in the Middle East and in North America. The increase in Britain was small in relation to world totals, but this is not the case in North America, where an "impressive expansion" has been achieved. In the United States alone food production in 1945 increased by 25% over the average for the period 1935 to 1939. The opinion is expressed that the quantities of grain being fed to livestock are too high in view of the needs in deficit countries for grain for human food. Under conditions of scarcity the most economical use of grain is for the feeding of human beings direct and not for its conversion through animals into meat and eggs for human food. Normally three and a half pounds of grain and concentrated feeding-stuffs are required to produce one pound of beef, five and a half pounds are required to produce a pound of eggs, and six to seven and a half pounds to produce a pound of pig meat. The current consumption levels are set out in a table; the amounts are stated in Calories per day as at the beginning of 1946. For European countries the figures are unofficial and somewhat rough estimates made on as nearly as possible a comparable basis. The average current consumption level per head per day of the whole population in the United States, expressed in Calories, was 3,150 or 102% of the pre-war figure. For Canada the figures were 3,000 and 100%; for Australia they were 2,900 and 97%; for Denmark and Sweden they were 2,850 to 2,900 and 90% to 95%; for the United Kingdom they were 2,850 and 95%; for France, Belgium, Holland and Norway they were 2,300 to 2,500 and 75% to 80%; for UNRRA countries (Greece, Yugoslavia, Czechoslovakia and Italy) they were 1,800 to 2,200 and 70% to 75%; and for ex-enemy countries 1,600 to 1,800 and 50% to 60%. In certain European countries the lot of the farming population is much better than that of the non-farm population. Thus in the last three groups mentioned (France, Belgium, Holland and Norway; the UNRRA countries and the ex-enemy countries) the average Calorie consumption among members of the population who do not work on farms is stated respectively to be 1,800 to 2,300, 1,400 to 1,800 and 1,200 to 1,400. When an average is stated it is, of course, clear that many persons will have a consumption below the average. The table to which reference has been made does not deal with any of the Eastern countries. We can thus understand that Mr. Hoover spoke truly when he described (as reported in the newspapers) the "measure of hunger" of 800 million people, more than one-third of the world's population. About 100 million people, he said, would be reduced to a 2,000 Calorie level, 100 million would be reduced to a 1,800 Calorie level, 150 million to a 1,500 Calorie level, 150 million to a 1,200 Calorie level, and about 300 million or more would be reduced to a 900 Calorie level or lower. The last-mentioned level, of course, means slow starvation.

The world situation in regard to food is certainly grim. Naturally the reader will ask what sources of supply are available and how they can be brought to the place where they are needed most. The White Paper contains a table setting out the supplies of wheat in the four main exporting countries—United States, Canada, Argentina and Australia. The figures for Australia may be reproduced. The total average annual supply (opening stock *plus* the crop) for the pre-war years 1934-1935 to 1938-1939 was 5·9 million tons; for the period 1939-1944 the average total was 7·1 million tons; for 1944-1945 the total was 5·7 million tons, and for the year 1945-1946 it was 5·0 million tons. The figures for domestic use (food, seed, animal feeding and so on) for these four periods were respectively (in million tons) 1·4, 1·7, 3·0 and 2·2. The amounts exported in these periods were respectively 2·9, 1·6, 1·6 and 1·1 million tons; end stocks were 1·6, 3·8, 1·1 and 1·7 million tons. It is not necessary for our present purpose to discuss in detail the present position regarding bread grains, rice, livestock numbers and feeding-stuffs, meat, oils and fats and sugar. The fact to be remembered is that in regard to many of them no early relief from shortage is to be expected. If the situation is to be met in anything like a satisfactory way, international agreements based on a realization of national responsibility will have to be made and observed. The burden will necessarily fall on the more favourably situated countries, and Australia is one of them. The example of Great Britain is something of which the British race can be proud, but this pride is worth nothing if it begins and ends with words of admiration. If we admire, we must also act. Until Australia does all that lies in her power we have no right to be content. Production and distribution are the two objectives. It is no use to attend to one without the other. Political ideas or ideals should not be allowed to interfere with either objective; unfortunately at present they do. Australia should be large-minded enough to find a way out of any political impasse, especially when the well-being of other peoples is at stake. In the long run it is the individual in any nation who is responsible for its action. We can thus conclude with words that have been credited to Mr. Hoover:

> If we can succeed in persuading every man and woman, every nation, to do their utmost, we shall master this famine, and we shall save the lives of hundreds of millions from the greatest jeopardy in all the history of mankind, we shall have saved infinite suffering.

Current Comment.

LESSONS FROM SPINACH.

THE use of New Zealand spinach has become popular in the United States of America by reason of the facts that this plant grows better than other edible greens in hot summer weather, and further that it responds so quickly and effectively to nitrogenous fertilizers. That it has a pronounced green colour has led to some extravagant recommendation by many nutritional monitors. Now comes a dispassionate investigation conducted in the Department of Horticulture, Missouri, by S. H. Wittwer, which puts a very different complexion on this topic, and in fact relegates this vegetable to the limbo of rhubarb leaves and wood sorrel.[1] New Zealand spinach actually contains so much oxalic acid and soluble oxalates that not only is its own calcium inadequate to make these innocuous as neutral calcium oxalate, but it robs other foods and even the body of the consumer of their calcium. The same condition has been found to be present sometimes in ordinary spinach and beet greens.[2] This finding inevitably suggests the phytic acid of cereal pericarps, and it is to be hoped that nutritional investigators will come to some convincing decision on this vexed question, for widely divergent views are held, from the extreme attitude that phytic acid of bran and pollard behaves like oxalic acid producing an adverse calcium balance, to the view expressed recently

---

[1] *Journal of Nutrition*, January 10, 1946.

[2] See, for example, Fincke and Sherman, *The Journal of Biological Chemistry*, Volume CX, 1935, page 421.

Unobstructed Breathing . . . Undisturbed Sleep

For patients suffering from common colds, sinusitis and nasal manifestations of allergy, decongestion is promptly achieved by topical application of Neo-Synephrine Hydrochloride without causing wakefulness.

Neo-Synephrine solutions are well tolerated locally, being isotonic and virtually non-irritating to nasal mucosa. Ciliary action is not impeded and the relative freedom from systemic reactions widens the range of usefulness of Neo-Synephrine.

Available in $\frac{1}{4}$% or 1% solution in 1 oz. bottles for dropper or spray; as a $\frac{1}{4}$% emulsion miscible with watery nasal secretions; and as a $\frac{1}{2}$% jelly in a collapsible tube with applicator.

Further information and samples will be gladly forwarded to medical practitioners upon request.

NEO-SYNEPHRINE
HYDROCHLORIDE

Frederick Stearns & Company Division
SYDNEY, AUSTRALIA
DETROIT, NEW YORK, KANSAS CITY, SAN FRANCISCO, U.S.A. : WINDSOR, ONTARIO : AUCKLAND, N.Z.

In Nutritional Deficiencies

To-day more patients than ever may be suspected of being anaemic. The rationing of important iron-giving foods deserves serious consideration as a possible cause for existing and potential iron deficiencies for many. Such conditions indicate that never before has it been so important to LOOK AT THE BLOOD!

When check reveals hypochromic anaemia, the most important step to take is to see that the patient's blood is supplied quickly and efficiently with iron. Anaemias of nutritional origin are effectively and economically corrected by the administration of Feromax (Plain or with Liver Concentrate).

The iron supplied in Feromax is ferrous iron . . . recognised as the ideal form for quick, thorough assimilation and conversion into haemoglobin. The ferrous sulphate in Feromax is sealed against oxidation. Its convenient dosage eliminates the necessity for massive iron feedings. Feromax is usually very well tolerated by the patient.

Prescribe Feromax for nutritional iron deficiencies, for the anaemias of pregnancy and other types of secondary anaemia. Clinical samples available on request.

Feromax

Wyeth INCORPORATED
INC. IN U.S.A.
44 Bridge Street, Sydney

LOOK AT THE BLOOD

FIOM

by a prominent British medical journal that phytic acid is "a figment of the imagination". The Missouri analyses of vitamin *C* in New Zealand spinach showed that this varies from 21 to 30 milligrammes per 100 grammes of fresh material; ordinary spinach has 40 to 100 milligrammes, whilst kale, turnip greens and broccoli have 75 to 200 milligrammes. Mere greenness therefore cannot be taken as a criterion of the excellence of a vegetable from the standpoint of either minerals or vitamins acquired by the consumer. Another point which came out clearly in this investigation is that when the New Zealand spinach was made to grow with extra luxuriance through the application of nitrogenous fertilizers, the vitamin *C* content fell. This has been found to be the case with other edible plants.[1] This consideration may have far-reaching results in our evaluation of the nutritional standing of any vegetable product. It was certainly disconcerting when Winikoff, working in a laboratory and under a direction which ruled out the possibility of error, found that the breast milk of Melbourne women had an insufficiency of ascorbic acid.[2] One is tempted to surmise that we have here the old antagonism between quantity and quality in food production and that economic pressure has forced the farmer, market gardener and orchardist to think of yield rather than grade of excellence. It is generally admitted that during this century the potato has undergone steady deterioration in taste, though the return per acre has increased. If a corresponding decline in nutritional value were also discovered, we should not be surprised. In a similar manner the striving after large numbers of eggs per fowl per year has led to a falling off in the colour, texture and composition of the yolks. New Zealand spinach plays a very minor role in nutrition, but it offers us two excellent lessons, one that the vegetable which happens to be green may not be worthy of recommendation, indeed may be discarded as unwholesome; the other is that the perpetual quest after bigger yields can be, from the nutritional standpoint, a matter for regret.

MEDICAL EDUCATION AND MEDICAL PRACTICE IN GERMANY DURING THE WAR.

AN interesting and informative article has been written by Colonel Robert M. Zollinger, of the Medical Corps, Army of the United States,[3] dealing with medical education and practice in Germany during the war. Before the war medical science in Germany was always held to have attained a high standard, and many persons no doubt supposed that the German genius for organization would be reflected in medical education and practice during the progress of the war. Zollinger holds that German superiority in matters medical is a fallacy, and he also finds that it is doubtful whether any significant developments have taken place in recent years in that country either in medicine or in surgery. He bases his remarks on what he learned on recent visits to the clinics of professors of medicine and surgery in three prominent German medical schools. Whether information gained from these centres (which by the way are unnamed) may be taken as representative of the whole country is probably open to argument, but some of Zollinger's impressions are summarized here for what they are worth.

The professors who were interviewed agreed that the calibre of the students was much below the pre-war level. This was thought to be due to several factors. Most of the students came from the army, being released because they expressed a desire to study medicine; many of them were anxious only to avoid the hardships and dangers of combat. In most cases they had neither the background nor the aptitude for study in a medical school. These men were physically fit, they were part of the Student Combatant Corps, and were under the direction of an army officer in each school. They wore uniforms, and were committed to the army while at school and at the end of their studies. A second group consisted of soldiers discharged from the services because of general physical disability or for other reasons. The State paid for the tuition of both these groups. A third group comprised those initially unfit for military service and a few who were excused from it because they had shown a particular aptitude for the study of medicine. These students paid for their own tuition, which amounted to 300 or 400 marks a year, and for their living expenses which were about 120 marks a month. After their graduation they were assigned to civilian or static military hospitals; a select few were trained as specialists after graduation. The last-mentioned group comprised some women, but women were not welcomed as students by the professors. The main difference between the war-time and the pre-war selection of students was that during the war most students were admitted by an outside authority. It was thought that many students with an aptitude for the study of medicine had no opportunity to enter a medical school.

Undergraduate teaching seemed to have been marked by curtailment and interference. At the beginning of the war the total period of study was reduced from six years or twelve semesters to five years or ten semesters. Early in 1945 it was further reduced to four and a half years or nine semesters. But this was not the only reduction, for interruptions were associated with military training and Nazi party functions. At least one semester of the premedical years was spent by the student as a medical corps man at the front. During the three medical years the student had to spend approximately two semesters working in an army hospital at the front. Apparently there was no systematic arrangement for the assignment of these students to army service. As a result of this state of affairs a great deal of clinical teaching at the bedside was omitted. Zollinger remarks that in the circumstances no faculty could have juggled a curriculum to cover the needs of such a fluctuating student body. In most cases the time actually spent by the student at the university was only three and a half years. In addition to this curtailment of study which had a prejudicial influence on the quality of medical graduates, other factors operated—there were the general hardships of war and the frequent, at times almost daily, interruption from air raids.

The ordinary methods of post-graduate training in which professors had up to forty assistants undergoing training were naturally upset. The number was greatly reduced and an increasing number of women had to be accepted as assistants. Research by the professors had to be curtailed; there was a lack of assistance, clinics and laboratories were damaged by air raids, and there was a shortage of drugs and other supplies. Still, most professors tried to continue their researches, but many of them were unable to publish their findings because of shortage of paper or because of arbitrary discriminations against them by Nazi officials. Some of the professors expressed resentment at the occasional appointment by Nazis of inferior men to important posts at the head of departments. They also appreciated keenly the loss to the universities of some men because of racial discrimination.

Zollinger's observations on medical practice can be only briefly mentioned. Sulphonamide therapy was looked on as the greatest advance made during the war, but the sulphonamide drugs were more highly regarded by the physicians than by the surgeons. Apparently both in civilian practice and in the army the use of sulphonamides in wound therapy was optional. The treatment of chest wounds was neither standardized nor modern. No new instruments or modern devices were observed in any of the clinics visited. The operating theatres of the clinics did not contain a single modern machine for the induction of anæsthesia. Zollinger has much to observe about the effect of interference and regulations by the State on the selection and activities of students and teaching staff. He thinks that irreparable damage has been done to the medical profession in Germany. This is a gloomy view, and, we hope, incorrect.

---

[1] Wittwer, Schroeder and Albrect: *Soil Science*, Volume LIX, 1945, page 329.

[2] THE MEDICAL JOURNAL OF AUSTRALIA, February 16, 1946.

[3] *New England Journal of Medicine*, May 7, 1946.

Abstracts from Medical Literature.

PHYSIOLOGY.

Role of Proprioceptors in Shivering.

J. F. PERKINS, JUNIOR (*The American Journal of Physiology*, December, 1945), reports the results of experiments in which shivering movements in cats were recorded by means of two phonograph pickups connected to a two-channel ink-writing oscillograph. Simultaneous records of the tremor were made in normal and in deafferented hind limbs. The movements of the limbs during shivering were rhythmic on the normal side, always irregular on the deafferented side. A hemi-decerebellate animal and two animals with severance of one dorsal column shivered normally on both sides. The rate of shivering in a normal muscle could be changed by 100% or more by varying the mechanical resonance of the moving muscle. This was accomplished by adjusting the position of a pair of weights mounted on a lever attached to the tendon, or by varying the tension of a rubber band against which the tendon pulled. Deafferented muscles did not shiver rhythmically even with this arrangement. It is concluded that the rhythmicity and rate of shivering are determined peripherally by a mechanism which involves the proprioceptors and resembles that of reflex clonus. The rate of shivering in the normal animal is probably close to the resonant frequency of the moving part. A pacemaker action of the shivering centre appears unlikely.

Age, Sex, Carbohydrate, Adrenal Cortex and other Factors in Anoxia.

S. W. BRITTON AND R. F. KLINE (*The American Journal of Physiology*, December, 1945) report that age, sex, species and environmental temperature are important factors in resistance to low barometric pressures. Rat fœtuses and immature pouch opossums are highly resistant to anoxia. Infant animals show sharp declines in resistibility over the first one or two weeks of life, then become actually less tolerant for a period than older or adult animals (cat, rat). The relatively large size of the adrenal glands may be a factor in the superior resistance of young animals. Correlated probably are the high liver glycogen levels in infant rats. When glycogen levels have declined at three to four weeks of age, and the adrenals have also regressed (relative to rat weight), resistance to anoxia is found reduced even below that of adults. Out of six different mammalian types studied, the American brown bat showed phenomenally high resistance to anoxia. In nearly 2,000 tests, adult female rats showed much longer anoxic survivals than males over the temperature range 16° to 33° C. In 282 other cases (eleven series), females were similarly predominant. The large size of the adrenal glands in females, due chiefly to cortical tissue, may be a factor in these results. In infant male and female rats, in which adrenal weights are approximately the same, no sex differences in tolerance were observed. Survival times under anoxia are inversely related to environmental temperature. For a 10° C. drop, survivals were increased about 50%. Glucose administration improves greatly the resistance of rats to low barometric pressures. Carbohydrate meals and especially glucose injections were effective. Fully fed animals did somewhat better, also, than fasted controls. Insulin markedly reduced the ability to withstand anoxia. Carbon dioxide and oxygen (15/85) breathing before exposure to anoxic conditions was particularly helpful to fully fed rats. In combination, glucose injection and carbon dioxide and oxygen prebreathing proved most useful in raising resistance. Carbon dioxide and oxygen tested separately were not significantly effective when used as preexposure measures. Serum potassium, sodium and chloride levels were not affected by anoxic exposure. Beside the above data, a considerable array of evidence on young and adult animal responses points to specific adrenal involvement in anoxia. Infant rats without adrenals were strikingly reduced in resistibility to levels indeed below those of normal adult animals. Experiments on adrenal hypertrophy and cortical extracts offered supporting evidence. Altogether the results strongly indicate that while other factors are involved, the adrenal cortex aids greatly in extending life under anoxic contingencies. This is probably effected especially through its carbohydrate-regulating mechanisms.

Pulse Reaction to Step-Up Exercise on Benches of Different Heights.

E. R. ELBEL AND E. L. GREEN (*The American Journal of Physiology*, February, 1946) state that in normal subjects following the step-up exercise, for periods of thirty or sixty seconds, on benches of twelve to twenty inches in height, the pulse rates taken for thirty seconds, beginning one minute after exercise, are practically the same for the various heights of the benches and the durations of exercise. The pulse rate for the thirty seconds immediately following the stepping-up exercise depends upon the height of the bench and the duration of the exercise. After thirty seconds of exercise, the average increment is 3·7 beats per minute greater for each additional two-inch increase in the height of the bench. After sixty seconds of exercise, the increment becomes 5·6 beats per minute greater for each additional two-inch increase. The height of the bench and the duration of the step-up exercise as used in this study do not significantly alter the pulse rate if the pulse record is taken one minute after exercise.

Vascular Responses of the Nasal Mucosa to Thermal Stimuli.

H. J. RALSTON AND W. J. KERR (*The American Journal of Physiology*, July, 1945) report the results of experiments on human subjects, some of whom were normal, whilst others were susceptible to common colds. Temperature measurements of the skin and of the mucosa of the anterior portion of the inferior turbinate were made with constantan-copper thermocouples. Measurement of changes in the volume of the nasal space were made with a balloon which in the deflated state was 4·8 centimetres long. After insertion, the balloon was inflated to a pressure of 20 millimetres of mercury. They state that there was a rough parallelism between changes in nasal and finger temperatures when the nasal temperature and volume changes in response to cutaneous chilling and warming were studied. Local chilling characteristically results in a drop of nasal temperature, with substantial return toward the initial level within a few minutes. Local warming, after a transitory reflex drop, is generally followed by a permanently elevated nasal temperature so long as the stimulus is being applied. No systematic differences between normal and hypersensitive subjects have been observed. Local chilling of a subject exposed to a high environmental temperature results in a pronounced nasal hyperæmia. With general cutaneous chilling and warming, four types of nasal response have been observed, designated hyperæmia, ischæmia, turgescence and release of turgescence. These responses, involving changes in both temperature and volume of the nasal mucosa, are readily duplicated elsewhere in the body.

Effect of Ambient Air Temperature and of Hand Temperature on Blood Flow in Hands.

C. R. SPEALMAN (*The American Journal of Physiology*, December, 1945) reports some blood flow measurements made on a group of men subjects eighteen to thirty-five years of age. The men were sitting in uncomfortably warm, comfortable, and uncomfortably cold environments with hands immersed in water at temperatures ranging from 2° to 35° C. Under comfortable environmental conditions, blood flow was less in moderately cold hands (0·9 millilitre per 100 millilitres per minute for hands in water at 15° C.) than in very cold hands (4·3 millilitres per 100 millilitres per minute for hands in water at 5° C.) or in warm hands (5·9 millilitres per 100 millilitres per minute for hands in water at 35° C.). A qualitatively similar relationship existed in uncomfortably warm and uncomfortably cold environments. In the uncomfortably warm environment, however, blood flow in moderately cold hands (water temperature, 15° C.) was about the same as in very cold hands (water temperature, 2° C.). At any given hand temperature, blood flow was greater the warmer the body. This effect was most pronounced in moderately cold hands (*circa* 15° C.) where blood flow in the case of the uncomfortably warm environment was about twenty times that in the uncomfortably cold environment, and least pronounced in very cold hands (*circa* 10° C.) where the difference was only about threefold.

The Action of Cardiac Ejection on Venous Return.

H. A. BLAIR AND A. M. WEDD (*The American Journal of Physiology*, February, 1946) discuss the mechanical relations between cardiac ejection, lung air pressure, chest wall movements and venous return. They state that the excess of arterial outflow over venous inflow to the chest during systole tends to create a partial vacuum of about 15 millimetres of mercury in the lungs. Collapse of the chest wall, however, permits only a small fraction of this to be realized, about 0·5 millimetre of mercury according to derivations from measurements of transient increase of body volume with each heart beat. This partial vacuum will assist venous return, but it is not nearly as important as the negative intrapleural pressure in performing this function. The relative sizes of cardiac stroke volume and lung volume determine the partial vacuum which tends to be created in the lungs by the heart beat, and therefore the potential aspirating forces on venous blood and chest wall. The ratio of cardiac stroke volume to lung volume is approximately constant in warm-blooded animals. Consequently, the relative mechanical effects of ejection are similar in animals of all sizes. Decrease of lung volume caused by accumulation of blood in the chest and the accompanying changes of elasticity may be expected to increase the aspirating action of arterial ejection. That this occurs is not proven directly, but it is shown that the normal mechanical relations may be greatly altered in valvular disease of the heart. In advanced mitral stenosis, for example, the chest may expand rather than contract during systole.

BIOCHEMISTRY.

Alloxan.

R. S. Tipson and J. A. Ruben (*Archives of Biochemistry*, October, 1945) have described two colour tests for use in the qualitative detection of alloxan (or its reduction products). These two tests have been applied to trichloracetic acid extracts of a variety of animal tissues and fluids. The results obtained suggest that alloxan (or its reduction products) may be a normal constituent of certain tissues. These observations may be interpreted as indicating that over-production of alloxan, or inability to destroy it, may result in a concentration of alloxan that is cytotoxic and eventuates in diabetes.

Biotin.

J. Gardner *et alii* (*Archives of Biochemistry*, December, 1945) have carried out two studies of the biotin metabolism of ten college women who consumed a diet with a low, moderate and high biotin content and the moderate diet supplemented with 50γ and 100γ of biotin as the methyl ester. These diets contained from 9γ to 171γ of biotin daily. An increase of the biotin intake in food from 9γ to 33γ failed to cause a rise in the urinary biotin content, but the fæcal biotin increased 40%. When 171γ of dietary biotin were ingested, the urinary biotin rose markedly to more than five times that excreted on the low or moderate diet, while the fæcal biotin increased 80% over that of the diet with a low biotin content. Total biotin output averaged 9·0, 3·0 and 1·5 times the dietary intake for the diets with low, moderate and high biotin contents respectively. Thus, biotin synthesis was again indicated and relatively less synthesis seemed to take place with the diet with a high biotin content. When 50γ of biotin were added to the moderate biotin diet, a maximum of 30% of the additional biotin was accounted for in the urine. The maximum urinary output occurred on the third or fourth day after the beginning of the biotin feeding. A larger percentage of biotin was recovered when 100γ of biotin were ingested. A maximum of 72% was accounted for in the urine. The rise in excretion continued for the entire six days of higher intake. Fæcal biotin did not rise when either 50γ or 100γ of biotin were fed. The water-soluble biotin in dried fæces varied from 2% to 15% of the fæcal biotin. An increase in measurable biotin occurred when a water extract of fæces was acid hydrolysed. The diurnal variation in urinary biotin was studied in diets of low, moderate and high biotin intake. The hourly biotin excretion was greatest in the afternoon and evening and lowest during sleep and in the morning. Twenty-five or 50γ of biotin given with breakfast and dinner were excreted promptly, a large portion but not all of the additional biotin being found in the urine within six hours after ingestion.

Fatty Acids.

D. Rittenberg and K. Bloch (*The Journal of Biological Chemistry*, October, 1945) have carried out experiments in which sodium acetate labelled with D and C^{13} was administered to mice and rats. The fatty acids and cholesterol were isolated separately from the livers and carcasses of the mice. Both lipids contained C^{13} and D, indicating the utilization of both carbon atoms of acetic acid in their formation. Degradation of the fatty acids suggests that the labelled atoms are distributed at alternate positions along the carbon chains. The finding that the cholesterol contains not only deuterium but also C^{13} is proof that both carbon atoms of acetate are utilized in the synthesis of cholesterol.

Hæmatopoiesis.

J. M. Osten *et alii* (*The Journal of Biological Chemistry*, October, 1945) have shown that purified human or beef globin fails to support growth and normal hæmoglobin formation in the rat. Supplementation of either type of globin with isoleucine, all other known dietary factors remaining unaltered, results in the maintenance of a normal concentration of hæmoglobin in the blood. The subsequent removal of isoleucine is followed by the development of a mild to severe anæmia and death of the animal. These observations indicate that isoleucine is needed for normal hæmatopoiesis in the rat.

Human Milk Fat.

J. B. Brown and B. M. Orians (*Archives of Biochemistry*, March, 1946) have examined a large specimen of human milk fat with reference to the amounts and nature of its component fatty acids. No evidence could be found for the presence of more than traces of acids below C_{10}. As a result of distillation of two specimens of methyl esters, prepared from this fat, and applying low temperature crystallization technique to the main fractions, a number of pure esters and acids have been isolated for the first time and characterized. The presence of mono-ethenoic acids from C_{10} to C_{18} has been verified; the C_{18} acids of this type were shown to be made up chiefly of oleic acid, together with isomeric octadecenoic acids. About 40% to 50% of the octadecadienoic acids was shown to be ordinary linoleic acid, the remainder being presumably the isolinoleic acid found in butter fat. Small amounts of both trienoic and tetrenoic acids of the C_{18} series were also shown to be present, although the amount is negligible. The finding of dienoic acids of series above C_{18}, reported by Baldwin and Longenecker, was confirmed, and in addition evidence was presented for the presence of high molecular weight trienoic acids. This specimen of fat is much more similar to human body fat than it is to a typical milk fat.

Anoxia.

E. L. Hone *et alii* (*Archives of Biochemistry*, December, 1945) have shown that natural mixed tocopherols given orally in physiological quantities to adult rats result in a time of survival to anoxic anoxia greater (+89%) than that of controls on a diet containing no vitamin *E* and with a low fat content. The effectiveness of tocopherol is decreased (to about +31%) when the diet contains fat at a 12% level. Fat in the diet decreases survival time of rats under conditions of anoxia, possibly by decreasing the animals' respiratory quotient. Injection of large single doses of δ-α-tocopheryl phosphate greatly increases the time of survival to anoxia of guinea-pigs on a "rabbit chow diet", but has no effect on rats.

Endocrine Tissues.

W. H. McShan *et alii* (*Archives of Biochemistry*, January, 1946) have determined the succinic dehydrogenase activity of certain endocrine tissues, the uterus, seminal vesicle and prostate of the rat, and compared it with that of the liver. It was found that the adrenal gland has an activity of approximately half that of liver and approximately twice that of pituitary, uterus, thyreoid, thymus and testes. Pancreas, prostate and seminal vesicle tissues had little activity, the activity of the tissue of the seminal vesicle being least of all.

Thiamin Requirements.

C. A. Mills *et alii* (*Archives of Biochemistry*, March, 1946) have shown that the thiamin requirement per gramme of food rises sharply with advancing age in rats adapted to tropical warmth or temperate coolness, while the absolute requirement in γ per day advances with increasing body size. A similar rise in dietary thiamin concentration was found necessary to prevent signs of acute polyneuritis and death with advancing age and increasing body weight. At eighteen months of age rats kept in tropical heat develop acute and fatal thiamin deficiency at dietary thiamin concentrations adequate to support optimal growth in temperate coolness. Thiamin requirement, therefore, seems largely conditioned by the mass of metabolizing tissue and relatively independent of caloric intake under conditions of voluntary *ad libitum* feeding. Protein and choline requirements per kilogram of food seem to change little with the reduced food intake per unit of body mass in advancing age. The conclusion seems justified that diets for the aged or those in ill health should be enriched with thiamin to compensate for reduction in amount of food consumed. It seems probable that the same principle should be applied with the sharp caloric restriction of weight-reducing and hot weather diets.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on April 26, 1946, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. A. C. THOMAS, the President, in the chair.

The Rehabilitation of War Neurotics.

DR. C. M. MCCARTHY read a paper entitled "The Rehabilitation of War Neurotics" (see page 910).

DR. H. H. WILLIS read a paper entitled "The Rehabilitation of War Neurotics" (see page 912).

DR. H. L. SPEARMAN said that the views of the opening speakers had been valuable and instructive, and he regretted that practising psychiatrists were conspicuous by their absence, although the Mental Hospitals Department of New South Wales was well represented. A committee dealing with psychiatric problems of the disabled soldier had been in existence for about two years, and had had many discussions. This probably accounted for the absence of practising psychiatrists from the meeting. Dr. Spearman then went on to refer to one or two points, chiefly arising out of Dr. Willis's remarks. First, he asked why there was such a shortage of psychiatrists, and what was the psychiatrist's point of view. It had taken him (Dr. Spearman) three years to gain his diploma in psychiatry, twelve months being spent in a mental hospital. Most men would not do that, and yet the diploma was a necessary qualification. Psychiatrists were not appreciated. Saint Vincent's Hospital had one psychiatrist; there he had had to conduct an out-patient clinic and deal with eighty patients per session. Sydney Hospital was in the same position. As far as Dr. Spearman knew, Prince Henry Hospital had no psychiatrist; the Reception House had no psychiatrist. How could people become psychiatrically minded if the big hospitals did not have psychiatrists? The Minister for Health said that he did not consider a psychiatrist necessary at the Reception House. Referring to Dr. Willis's remarks on peptic ulcer, Dr. Spearman said that Dr. Holmes à Court had laid it down that peptic ulcer occurred in those with a psychological turmoil; there had to be an anxious or nervous background. Speaking of facilitation, Dr. Spearman said that it did occur in private life. The patient might be cured, but almost always relapsed some time or other. Dr. Spearman could give no opinion on the question of facilitation among soldiers. Another problem was whether the neurotic tendency was hereditary or acquired. One authority stated that the neurotic was born, not made. Dr. Spearman did not think that that was the whole story; it was again the question of the soil and the seed, with preference to the seed. The cause of the trouble was usually to be found in the home life, and chiefly in the mother. Referring to Dr. Willis's remarks about pensions, Dr. Spearman said that he thought that nowadays everybody agreed that the man wedded to his pension never finally threw off his disability. Dr. Willis had said that he preferred diseases to wander. Dr. Spearman cited the type of patient who had suffered from headaches for years or all his life; if after treatment the headache moved to another spot, then the patient was told that it was sure to move out altogether. Dr. Spearman thought that one of the greatest disabilities was the fact that the patient in the country had to be brought to the city for advice. This was a pity; centres should be established in the country. He did not think it a good thing to group all neurotics in hospitals. The person with whom they were chiefly concerned was the man with the early neurosis—the type of person who suffered from pains here and there and was subjected to every possible test, no abnormality being found. It was no use having such a patient admitted to a big centre; the general practitioner could be of the greatest help in his case. Dr. Spearman had recently shocked a psychologist of high standing, who had referred a patient to him, by giving the patient a bottle of medicine; but Dr. Spearman was convinced that, as well as explanation of his condition, a bottle of medicine was essential for such patients. Referring to persons who never exceeded a mental age of twelve years, Dr. Spearman said that they never made anything more than bootmakers and farm-hands; they never progressed to any great heights or got a full education. With regard to the value of early diagnosis and treatment, Dr. Spearman commended the book entitled "The Nervous Soldier", by Professor John Bostock and Dr. S. Evan Jones, which had received considerable adverse criticism everywhere. However, people were beginning to realize that the description of the nervous soldier given in that book was sound. All journalists were neurotics. The family doctor failed to recognize early neuroses; he treated them as physical diseases, and such family doctors bred a lot of neuroses. When the patient ultimately reached the psychiatrist, his neurosis was very hard to uproot. Shock treatment was not good in all cases.

DR. A. T. EDWARDS said that he had rarely listened to two such diverse views. Dr. Willis had kept his feet on the ground and given a pessimistic account; Dr. McCarthy's paper was filled with youthful optimism. Dr. Edwards said that he himself still retained some optimism; but it was somewhat tempered by the general public's scornful attitude to minor psychoses. The general practitioners and the medical profession were leading the public in their scorn for neurotics. At the university, when the students were doing out-patient work, the physician examining a patient would say "functional", and pass him out. The place of psychiatrists in general hospitals suggested that this was still the attitude. Moreover, students were taught—and probably this went on still—that no case should be diagnosed as functional unless every avenue had been explored to prove that it was not organic. Dr. Edwards agreed with Dr. McCarthy that that procedure would lead to much more ill health and do more harm than to make a diagnosis dependent partly on the patient's personality. Dr. McCarthy blamed the psychiatrists for not making practical suggestions; but they had not been completely idle. Some two years earlier a meeting had been called and a scheme formulated for a psychiatric clinic had passed through one of the larger social agencies; this, it was hoped, would bear fruit before long, so that such a service would be established. Dr. Willis had mentioned social service workers and expressed a doubt of their value; Dr. Edwards thought that they could be very dangerous. Unless they were psychiatrically trained or were to be used only as almoners, it was better not to use them. Unless they were psychiatrically trained they had no knowledge of the psychodynamics of mental illness. The lay psychologist was coming into the picture because of the shortage of psychiatrists. Psychiatrists were so few that they were only half doing their job. Dr. Edwards agreed with Dr. Spearman on the question of the seed and the soil. The soil was probably important, but not so important as Dr. Willis would have them believe. This emphasis put on heredity was a challenge to the psychiatrist. If it was the cause of the minor psychoses, then psychotherapy was not likely to be at all effective. Yet he had seen dramatic recoveries occur, the patients remaining well for many years, where the only treatment had been psychotherapy. It was important not to believe that the underlying cause was an hereditary weakness in neuronic structure. If they believed that that was so, they had better give up psychiatry and take up eugenics.

DR. BASIL WILLIAMS, discussing the problem of the rehabilitation of servicemen, said that the problem was made large because the people were not examined properly when they were taken into the army. Very little provision was made for any examination, and many people were taken in who should not have been in the army. In any future war some scheme should be formulated to keep such people out of the army. The men who examined them were not qualified, not taught; some had been retired for many years and were out of touch with medicine altogether. Referring to pensions, Dr. Williams said that those who dealt with a lot of compensation cases realized the benefit of a lump sum payment. The whole problem could be minimized by this method and eventually much sickness and public money saved. The treatment meted out at the Randwick Military Hospital seemed to be approaching that at Sydney Hospital and at Saint Vincent's hospital—the clinics were hopelessly overcrowded, interviews were very short, the doctors were not trained in psychiatry or medical psychology, patients were given a bottle of medicine and a sedative and dismissed with a blessing. If there was some liaison with the general practitioner attending the patient, results would be very much better; but there was no such liaison. Dr. Williams said that he had written letters with several of his deserving patients, but had received no reply from the Repatriation Department. The patients had had very short interviews and had returned with bottles of medicine. Another particularly important problem was the rehabilitation of married couples. Sometimes the man had been married for many years and had been separated from his wife by a period of active service; he returned home and was given no guidance whatever. Some two years previously, during a post-graduate session, an excellent speech had been made by an American medical officer; he had given information on how the American army treated its fliers when they were going down on leave. Some books had been prepared by the American army, and they could easily be copied by the Australian authorities. People who married during the war also had a great problem; they missed the usual flow of events (courtship, marriage, honeymoon, period of adjustment), and instead they suffered from a lack of ties, a lack of interest in building a home, and the necessity for living with parents or "in-laws", which never worked. Greater use could be made of general practitioners. Dr. Williams said that he felt strongly on the subject of medical education, and thought that at the present time the general practitioner was a very inadequate creature. But he was optimistic enough to think that there would be a return to the old-style general practitioner, who was respected and loved by everyone.

Dr. E. B. Tunbridge said that he had spent many years as a general practitioner in country districts, and during that period he was repatriation referee. There were two points that required comment. Dr. Spearman had said that the general practitioner lacked interest in the psychiatric problems of the patient. Dr. Tunbridge did not think that Dr. Spearman could have had much experience of country practice. There one lived with people and they grew up around one; it was essential to take an interest in the make-up of one's patients, and unless the country practitioner could diagnose and treat fairly well the ordinary neuroses he was unlikely to succeed in his district. To say that country practitioners were all lacking in interest was unfair. It was also unfair to say that the Repatriation Department referred patients back with a bottle of medicine and some phenobarbital tablets. Dr. Tunbridge had found the opposite in Western Australia. That liaison between the general practitioners and the Repatriation Department should be encouraged. A little more sympathetic understanding of everyone's problems, and of the general practitioner and his problems, too, would get them a good deal further.

Dr. McCarthy, in reply, said that he was surprised and pleased that Dr. Willis had agreed with him on so many points. Dr. Willis had been kind in refraining from criticism of the army psychiatric centre at Goulburn. The centre had done a very good job, and it was a tragedy that it should have been scattered to the four winds. They had got their patients well in an artificial environment. They were trying to get into touch with their patients by post. It was disappointing to find that many of them who were thought to be quite well were not readjusting themselves well in civilian life. Some contact with these people was necessary. Dr. McCarthy said that he was advocating that a central centre should be created, primarily for the ex-service neurotic, and later to be extended for the civilian neurotic. The whole problem centred round the time factor. Every worthwhile psychiatrist would allow at least an hour with his patient at the initial interview; it was necessary to give enough time on the first occasion to these people, who were really suffering. Two good books had been published recently on psychosomatic medicine. One of the advances in modern medicine was the discovery that accidents were not accidents, but an emotional escape from a difficult situation. It was significant that during the coming week Professor Lambie was to lecture on the physiology of the emotions. In advocating a better deal for the ex-service neurotic, Dr. McCarthy said that he thought the psychiatrist should be there, but in the background, for guidance and investigation.

Dr. Willis, in reply, said that he did not know why Dr. McCarthy should have been grateful for his lack of criticism; he was just as pleased to cooperate with Dr. McCarthy after his discharge as while he was in uniform. Dr. Spearman had spoken of the shortage of psychiatrists; Dr. Willis said that he deplored it. More especially did he deplore the fact that so many army-trained psychiatrists were giving up the speciality and going to other branches of medicine. That was probably because of poor remuneration. Dr. Willis said that Dr. Spearman was completely under a misapprehension when he said that he (Dr. Willis) disliked modern methods of treatment; on the contrary, they were very valuable, not in curing mental disorders, but in cutting short their course. If a schizophrenic could be kept working for five years by shock treatment, something useful to the patient and the community had been achieved. But Dr. Willis's point was that psychiatrists adopting physical methods were abandoning the older methods, for example, explanation and suggestion, which were the foundation of psychiatric treatments. He was hopeful that insulin coma would aid some of these people where shock treatment had failed to do so. Dr. Willis then referred to Dr. Spearman's statement that people with a mental age of twelve years were fit only to be bootmakers and farmhands; he asked what was wrong with bootmakers and farmhands? The whole population could not be psychiatrists. The rewards of bootmaking were not inconsiderable at the present time. Dr. Willis did not think that a person with a mental age of twelve years should be labelled mentally deficient. Dr. Edwards had referred to the role of heredity. Dr. Willis said that certainly, if one thought that heredity was the only factor in mental disease, one became fatalistic and not helpful to progress in psychiatric medicine. But still, some patients seemed to be born to go mad and were merely fulfilling their destiny by so doing. Dr. Willis did not say that that was always true, but it was wrong to deny the existence of an hereditary factor and always to ascribe the breakdown to environment of the pre-school years. Replying to Dr. Williams's remarks about the errors made in the examination of recruits for the army, Dr. Willis said that the same errors would be made in the next war as they were made in the former war. Each generation had its own war and would run it in its own way. There seemed to be natural errors which were repeated by each generation. But in the recently ended war a great deal of trouble had been taken to pick out in training camps recruits presenting the grosser forms of mental disorder. Those with minor forms could not have been picked out early. With regard to the complaint of lack of cooperation by out-patient clinics, Dr. Willis said that he was surprised to hear the charge against Randwick Repatriation Hospital. It was the desire of the authorities there to cooperate, and they would be only too pleased to receive any information from private practitioners and give them information for guidance after treatment. Dr. Willis went on to say that domestic unrest played a big part in the production of "delayed shell-shock". The problem of the wrecked home was an important one. He did not know how to cope with it; that was really a matter for chaplains. Finally Dr. Willis said that, although shock treatment might relieve mental symptoms, the disordered thinking remained; that could be changed only by the old hard way of psychotherapy.

Dr. Thomas, from the chair, thanked the speakers for the excellent papers and the discussion. He said that, as one who had practised general medicine for many years, he thought that the general practitioner must play a big part in the rehabilitation of the war neurotic. After all, in many cases he would be the local medical officer for the Repatriation Department. It was only as one grew older and one's practice became more interesting in a way, that one realized what could be done by practising psychotherapy. Even in his practice at the present time, which was not of a general nature, Dr. Thomas encountered many cases which twenty-five years earlier would have been difficult. People consulted him, thinking they were suffering from all sorts of vague conditions, mainly surgical; but by a few pertinent questions it was possible to penetrate right down to the foundation of the trouble, and by a simple explanation to send the patient away much happier. Dr. Thomas thought that in the case of returned men, the general practitioner with the aid of the psychiatrist would be able to do a great deal of good. Dr. Thomas also came upon such cases in sitting on repatriation tribunals; he said that the tribunals did not always please Dr. Willis, because they sometimes had to raise the assessments. However, in the majority of cases the tribunals thought that the Repatriation Department was doing the proper thing by the men who came to them. Many of them felt that there was something wrong, because so many of these men had to go before them and were receiving pensions. However, at the present meeting some of these matters had been elucidated. The man should not be made to fit into the scheme, but the scheme should fit the individual. Dr. Thomas said that he had in mind two men who had been prisoners of war in Malaya for four years, and on their return to Australia were in a neurotic condition. They went to him for friendly advice. He advised them to go back to work as soon as they were out of the army. This they did, and their condition had greatly improved.

NOTICE.

The General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed civil practice as from the dates mentioned:

Dr. John J. Willson, 642, New Sandgate Road, Clayfield, N.2, Queensland (May 16, 1946).

Dr. B. N. Adsett, Sandgate Road, Nundah, N.E.3, Queensland (May 20, 1946).

Dr. A. J. Foote, Alexandra, Wickham Terrace, Brsbane, B.17 (May 25, 1946).

Dr. David F. Millar, Alexandra, Wickham Terrace, Brisbane, B.17 (June 1, 1946).

Dr. G. A. McLean, Alexandra, Wickham Terrace, Brisbane, B.17 (June 17, 1946).

Dr. J. M. Banks, 119, Marsden Street, Parramatta (July 1, 1946).

Dr. S. D. Allen, 215, Macquarie Street, Sydney (July 1, 1946).

Dr. D. B. Wightman, 16, Livingstone Road, Petersham (June 10, 1946).

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A meeting of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, Melbourne, on May 8, 1946, Dr. A. P. Derham, the newly elected President, in the chair. Part of this report appeared in the issue of June 22, 1946.

Basal Arachnoiditis.

Dr. M. L. Powell said that it was always interesting to see patients some years after a severe illness. The patient shown by him had previously been presented to the Pædiatric Society in October, 1939. She was admitted to the Children's Hospital in June, 1939, aged thirteen years, with a history of headache and vomiting for three months. These symptoms had been increasing in severity during the previous two weeks, and were accompanied by diplopia, staggering gait and head noises intensified with the heart beats. On examination she was highly intelligent, and an excellent witness. There was gross bilateral papillœdema, amounting to four diopters, with a macular fan in the right *fundus oculi*. The visual acuity was $^{6}/_{9}$ on the left side and $^{6}/_{6}$ on the right. There was slight peripheral constriction in both fields, with enlargement of the blind spot. Left rectus palsy was producing the diplopia. Nystagmus was present of a type associated with cerebellar lesions—when the patient looked to the right there was a rapid out swing with a slow return, of coarse phase; and when she looked to the left rapid and fine phase movements occurred indicating some right cerebellar dysfunction. The left arm tended to fall away slightly in the outstretched position, and the finger-nose-finger test on that side was not performed as well as on the right. The left biceps jerk and the right ankle jerk were somewhat depressed; otherwise the reflexes were normal. Auscultation and X-ray examination of the skull revealed no abnormality, and the results of the Wassermann test and the test for hydatid disease were negative. The pressure of the cerebro-spinal fluid was four hundred millimetres of water, and the fluid contained no cells and no increase in protein content. All these findings appeared to indicate a rapidly growing posterior fossa tumour. In view of the fact that her vision might fail, exploration of the cerebellum had been decided on. On June 9, 1939, an attempt was made to examine the ventricular contents, but the result was not very satisfactory owing to failure of the basal anæsthetic. The ventricles, however, did not appear unduly dilated. Five days later Dr. Whitaker had made a suboccipital approach to explore the cerebellum, preceding this with aspiration of the ventricle through the opening made five days before. The usual cross-bow incision was made, and the arch of the atlas nibbled away. The dura was incised, and immediately great herniation of the cerebellar lobes occurred. No evidence of tumour was found. With very great difficulty, and by considerable ablation of cerebellar tissues, the dura was brought together again and the incision closed. A hopeless prognosis was given, and all awaited what appeared to be the inevitable end. The next eight weeks provided a problem in control and management that was distressing in the extreme. From an intelligent, attractive, alert, bright girl the patient became an incontinent, dysarthric, manic-depressive, delusional, hallucinatory wreck of her former self, calling violently across the ward, laughing in a horrible mirthless fashion, semiconscious at times, maniacal at others, her voice having dropped in tone, until all wished her a speedy release. After about six weeks she developed generalized hirsutism, and this, with the lowered pitch of her voice, amenorrhœa and attacks of fairly typical sham rage, suggested the possibility of a Cushing's tumour; but in view of later evidence this was apparently due to hypothalamic dysfunction caused by the distortion in basal architecture due to the operation. About eight weeks after operation, when things were at their worst, the father had asked if deep X-ray therapy could be given. This request could not be refused, and arrangements were made for the patient to go to the Royal Melbourne Hospital. Scarlet fever developed in the ward, and she was not sent, which was fortunate, as her recovery might have been wrongly ascribed to radiation. Shortly after this episode, routine examination of her fundi showed a rather surprising decrease in the swelling of her disks, and it became obvious that her condition was starting to improve. She was still mentally unstable, with hallucinations and delusions; she was still irritable and unpredictable in temper, but the flap was not bulging, and in general there were undoubted signs of recovery. She started reading and doing fine work with her hands, and finally left the hospital three months after she had entered it. Dr. Powell said that he presented her now, seven years later, apparently in normal health. There was no abnormal finding apparent on examination of the central nervous system other than some slight constriction of the temporal fields, and the right optic disk was slightly paler than the left, but was not abnormal. Visual acuity was $^{6}/_{6}$ on both sides. There was no nystagmus or other evidence of cerebellar dysfunction. Three months after operation she had had her first menstrual period and synchronously all her excess hair fell out, taking a week for the epilation to be complete. She had carried on, all through the war, a job entailing fine vision and coordination—that of draughtmanship.

Dr. Powell said that they were thus confronted with a very typical cerebellar tumour syndrome, relieved by operation and reviewed after seven years, the patient being still perfectly well, doing work which required extreme delicacy of touch and vision. The answer must lie in an inflammatory rather than a neoplastic lesion, and in retrospect this case conformed to a localized arachnoiditis syndrome. Dr. Powell went on to say that as long ago as 1924 Gilbert Horrax, working with the Grand Master, Harvey Cushing, collected a series of thirty-three cases in which operation had been performed at the Peter Bent Brigham Hospital in Boston. These cases were extraordinarily similar to the one presented. Five of these patients died, two within a few days of operation and three two years later. In four cases necropsy was obtained, and all showed histologically inflammatory thickening of the arachnoid membrane forming the cerebellar and basal cisternæ. Twenty-eight patients survived and were well from one to nine years after operation, and in these cases there was disclosed at operation a greatly dilated posterior cistern with its thickened arachnoid membrane containing pent-up cerebro-spinal fluid under increased pressure. In some of these cases a piece of the arachnoid was removed for examination and showed microscopically the slight thickening that was evident to the naked eye. Spinal arachnoiditis and chiasmal arachnoiditis were illustrations of the same condition. Horrax had pointed out that there often was some arachnoid thickening over the posterior cistern in cases of frank cerebellar tumour, and that an arachnoid cyst overlying an acoustic tumour was quite common so that the operative appearance could be fallacious in this regard. In regard to ætiology, five of the cases followed closely upon *otitis media*, and it was reasonable to suppose that there had been some extension from this focus; and in regard to the other cases ætiological factors had been most vague, and such things as cranial trauma, infected contusions of the scalp, ocular and pharyngeal infections, syphilis and gonorrhœa had been mentioned as possible causes. Influenza and encephalitis had also been called into question, but evidence for all these was indefinite. Horrax, in summing up this experience, concluded with a statement which was remarkably applicable to the case presented when he said: "The group of cases here presented have been clinically indistinguishable from tumours of the cerebellum. Exploration of the suboccipital region was therefore the procedure of choice, and in the absence of tumour all that could be done was to open widely the arachnoid cisternæ that were presenting, thus evacuating their contents. In the large majority of patients this was sufficient to effect entire relief of the pressure symptoms, at least for the varying lengths of time that they have been followed. We have not employed lumbar puncture as a diagnostic measure, believing the risk of fatality from foraminal herniation of the cerebellum to be too great in patients with increased intracranial pressure."

Dr. Powell said that the patient presented actually had a more stormy post-operative course than most of the survivors in Horrax's series. The hypothalmic syndrome which she developed was most distressing to her parents and others. However, it did appear that she had completely recovered, and he could only assume that she had had a localized cisternal arachnoiditis with cyst formation, the structure of which was destroyed by the operative interference. There was a lesson to be learned in this case. Things were not always what they seemed. There were some who said before operation: "What is the use? Here is our old enemy of childhood, the sinister medulloblastoma. Why subject her to operation, with its distressing sequelæ of a bulging flap, *hernia cerebri,* and final dissolution when she could attain the latter goal so much more simply?" Like the cerebral abscess, the intradural blood cyst or the cerebral hydatid, the possibility of an arachnoiditis did offer a ray of hope. It was their duty to grasp at straws in apparently hopeless cases. Dr. Whitaker had grasped this straw with a grip so firm that to this day it had never relaxed.

DR. J. G. WHITAKER said that he had performed few operations with such a charming result! He could well recall the greatly increased tension present at operation. As soon as the dura was opened, cerebellar tissue oozed out. The subsequently happy sequel was not anticipated.

(*To be continued.*)

Special Correspondence.

CANADA LETTER.

From OUR SPECIAL CORRESPONDENT.

THE negotiations between the Provinces and the Federal Government concerning taxing powers and social services, including health insurance, have broken down in a most disappointing manner, with the Premiers of Ontario and Quebec militantly opposing the centralization necessary if Canada is to have an overall and equalitarian system of social services. It is interesting to note that the Premier of Quebec was met by 10,000 supporters of his opposing tactics on his return to Quebec City. However, the remaining seven Provinces may conclude agreements with the Federal Government and proceed to health measures on a national scale.

The Canadian Army has recently released details of its random survey for tuberculosis among 5,000 men in service in Canada in the age group below thirty-five. All army categories were included, and all the men had been in service for at least eighteen months. Three active cases were found, and eight men were suspected of minimal tuberculosis and followed. None of these showed X-ray signs on joining up. The survey touched 34 men who had had fibrotic or semicalcified lesions on enlistment. Of these, 28 showed no change, and six showed further resolution or healing.

An intensive "school" for food handlers has been organized in Saskatchewan, the object of which is to go to all towns where food is dispensed commercially, and, in cooperation with the trades concerned, to teach the essentials of food sanitation. Hotels and restaurants have welcomed this joint effort, and it is hoped that higher standards of commercial kitchen cleanliness will result, once the personnel concerned are given a chance to learn the cardinal rules through films, lectures and demonstrations.

Medical education is again to the fore in Canada, with the announcement that the University of Saskatchewan has just begun a new $600,000 building for its medical college. The University of British Columbia has just had its Professor of Public Health, Dr. C. E. Dolman, make a survey of over forty medical schools in Canada and the United States of America. He has pointed out that Canada has only half as many taxpayers to support each of its ten medical schools as the United States of America have to support their seventy schools. The extent to which out-patient diagnostic clinics have become widely patronized, when located at teaching hospitals, is well demonstrated at Duke University, Durham, North Carolina, where the 50,000 out-patients who come in one year travel an average distance of eighty miles.

An important development in out-patient diagnostic service has recently occurred in New York, where the Vanderbilt Out-Patient Clinic of the Presbyterian Hospital (Columbia University) has been converted to a "group clinic" comprising six internists, two surgeons, and one each from gynæcology, urology, dermatology, ophthalmology, oto-laryngology, neurology and psychiatry. By pooling expert opinion on one day, rather than on widely separated days, it will be possible to assess 35 cases daily or 9,000 per year, an increase over present numbers. For teaching purposes it means that students can see their patients right through, rather than seeing a group of strange conditions in unrelated specialties as heretofore. This concentrated and consecutive study of a few cases at a time will make for tidy habits of thinking medically, and the average student will feel more like a participant in the serious business of medical diagnosis, and less like a bored spectator at a variety show. The cutting down of overhead through the economy of laboratory investigations and of readmission procedures will appeal to hospitals everywhere. This pioneering move in New York will undoubtedly affect Canadian medical methods, and may lead to a type of self-supporting group practice on a semi-private basis at our teaching hospitals. There is certainly a growing concern to cut down on the "paper war" in our clinics, now that veterans are trying to return to the practice of essential medicine.

Correspondence.

CONGENITAL FIBROCYSTIC DISEASE OF THE PANCREAS.

SIR: I have read with interest and pleasure Dr. Blaubaum's discussion of "Congenital Fibrocystic Disease of the Pancreas", but was surprised to find that he made no reference to Dr. Margaret Harper's contributions on this subject.

Dr. Blaubaum suggests that there was no clinical description of this syndrome before that given by Anderson in August, 1938.(1)

In 1930 Dr. Margaret Harper reported in THE MEDICAL JOURNAL OF AUSTRALIA(2) the details of two cases of "congenital steatorrhœa", defined the classical features of this condition and emphasized the distinction from cœliac disease.

Early in 1938, a few months before Dr. Anderson's article appeared in the *American Journal of Diseases of Children,* Dr. Harper published the details of eight cases of "Congenital Steatorrhœa due to Pancreatic Defect" in the *Archives of Disease in Childhood.*(3) This report included the results of post-mortem examination of four infants and a detailed review of the syndrome and its clinical features.

Yours, etc.,

June 18, 1946. LORIMER DODS.

References.

(1) D. H. Anderson: "Cystic Fibrosis of the Pancreas and its Relation to Cœliac Disease", *American Journal of Diseases of Children,* Volume LVI, August, 1938, page 334.

(2) M. H. Harper: "Two Cases of Congenital Pancreatic Steatorrhœa with Infantilism", THE MEDICAL JOURNAL OF AUSTRALIA, November 15, 1930, page 663.

(3) M. H. Harper: "Congenital Steatorrhœa due to Pancreatic Defect", *Archives of Disease in Childhood,* Volume XIII, 1938, page 45.

POLITICS AND THE MEDICAL PROFESSION.

SIR: Unfortunately Dr. Dane's letter of June 1, 1946, demands a reply, as it contains so many misleading statements, which I am quite sure Dr. Dane believes:

1. The phrase "from each according to his ability, to each according to his needs" ("needs", not "means", as misprinted, which is nonsense) has not been dropped by socialists, but is still their ultimate goal.

2. No country has yet fulfilled the first of the obvious requisites for its attainment, that is, enough goods and services to provide every member of the community with every need. Even America, before the war, was short of over 4,000,000 houses for her workers; and was so short of education at that time that she has now reaped the dreadful harvest of 10,000,000 illiterates. To take one need alone (I think the most important), there is not and never has been any country with enough suitable buildings, trained staff, and adequate equipment to give a full education, up to the highest standard, to every child capable of benefiting from it. My second requisite, or "mystic pomposity" if Dr. Dane prefers it so, was that some generations of reeducation in community service, instead of personal acquisitiveness, would be necessary before the great majority of the people were morally fit for such a system. I believe that with proper education and a decent social order human beings are capable of learning to behave reasonably to one another, which is all that would be necessary.

3. I did not attempt to discredit Dr. Dane's assertion that the birth of communism had no analogy with obstetrical practices. I only pointed out that his statement that there was never any violence in obstetrics was an example of the most extraordinary loose thinking about a branch of his own profession; I am grateful to him for supplying me in the present letter with other examples of deplorably loose thinking and reckless saying, because I wish to discredit him as a witness, and so help to discredit his most dangerous thesis.

4. "That communism and fascism are essentially the same." That seems to me dangerous, because we have just fought a most terrible war to destroy fascism; if communism is essentially the same the dreadful corollary inevitably follows that we must fight an even more terrible war to destroy it. Fundamental matters on which communism and fascism are diametrically opposed are: (*a*) Racial theory: fascism teaches that there is a "master race" to which all others are subservient, which lead to the horrors of anti-Semitism; communism teaches that all nations are equal, if given full opportunity to develop their latent powers; having acted on that teaching, the U.S.S.R. has no exploited race within its borders; to my knowledge even the most bitter Soviet-hater has not been able to point at one. (*b*) The declared aim of fascism is to create a master class ruling over a slave world; the aim of communism is a society in which there shall be no class divisions and every citizen shall have equal opportunity for full development. (*c*) Fascism restricts higher education to the dominant class; communism aims at giving the fullest education to all. (*d*) Fascism restricts woman to a subordinate position—to menial work, to the home, and to be available "for the recreation of the tired warrior"; communism affirms her complete equality (but not similarity) to man. (*e*) Fascism teaches that the end of man is to serve the State; communism that man should use the State to improve his individual lot, until he becomes so civilized that he no longer needs it. (*f*) The fascist glorifies war; the communist loathes it. I hope that when Dr. Dane considers this list of differences, which is by no means complete, he will not still think them "trifling details".

5. Without any attempt to learn the facts, Dr. Dane states that I am a communist, which is as false as so many of his other reckless statements. Fortunately for him I am a tolerant person, otherwise he would be defending a libel action.

Yours, etc.,

Katoomba, E. P. DARK.
New South Wales,
June 10, 1946.

[This correspondence is now closed.—EDITOR.]

THE PLACING OF X-RAY FILMS IN ENVELOPES.

SIR: Whenever a series of a patient's X-ray films (say, of the chest) is being placed in an envelope, it is an excellent practice to see that they are arranged in chronological order with the most recent nearest to the flap of the envelope. I should like to commend this practice, which is not generally followed, to medical practitioners and radiologists. It saves time and trouble when the films are referred to subsequently; unless, of course, some careless person should disarrange them in the meantime.

Yours, etc.,

185, Macquarie Street, DOUGLAS ANDERSON.
Sydney,
June 13, 1946.

MALARIA.

SIR: The letter in today's (June 1, 1946) journal from Dr. M. R. Finlayson and Dr. J. McF. Rossell, chief medical officers respectively of the New South Wales Government Railways and Department of Road Transport and Tramways, is timely, but I think tends to lay too much reliance on the blood slide "to clinch the diagnosis". Any physician with experience in treating malaria on active service in the tropics and in the returned serviceman at home will admit the existence of a clinical "apparent malaria" in which the blood slide often returns a "negative"—which after all is only a "not proven" verdict. Amongst other clinical signs tenderness over the spleen is a point of importance. Initial malaria appearing after return from the tropics is often due to the patient's carelessness in not keeping up the preventive "Atebrin" ingestion. Some cases appear particularly late after leaving the tropics. Some "certainties" give a negative and some "doubtfuls" give a positive. Some are not conventionally typical. Is it that "Atebrin" medication has produced a "groggy wog"?

The reference to the Repatriation Department is correct. Its efficiency in this matter is commendable. In response to a call the local medical officer attends, takes necessary drugs (quinine, "Atebrin" and "Plasmoquine"—11-day course for initial attacks, "Atebrin" 63-day course for recurrences), sends a blood slide by family messenger to Prince of Wales Hospital, Randwick (receiving a telephoned result same day), reports on Form 71 *re* the case and certifying probable incapacity for which sustenance is payable. One has never seen more than seven days needed nor requested. One agrees there may be a "malaria neurosis", but there is a possibility that the non-neurotic returned man often tries to battle through an unrecognized mild malaria.

Yours, etc.,

The Boulevarde, KEVIN BYRNE.
Lakemba,
New South Wales.
June 1, 1946.

BACILLE CALMETTE GUÉRIN.

SIR: In your account of what seems to have been a most interesting address given by Dr. H. M. James in Melbourne, published in the current issue of the journal, reference is made to *Bacille Calmette Guérin*, and Dr. James is reported as saying (in reference to his own travels) that ". . . it is unstable and should be used within five days or at latest ten. It is made in Montreal, and it would be difficult to arrange supplies even with air transport". Presumably Dr. James is referring to transport to Australia from Canada.

My reason for writing is to inquire whether the same unfortunate outlook prevails in Canberra as previously. Exactly eleven years ago at the Pasteur Institute in Paris I personally received directly from Dr. Guérin himself a very generous offer to train any suitable Australian medical practitioner in the technique of the subculturing of "B.C.G." without cost, even in the matter of board and lodging; and further, Dr. Guérin guaranteed to supply on board the ship taking the trainee back to Australia at Marseilles, Toulon or Bombay, a thoroughly tested, efficient and innocuous culture of "B.C.G.", providing that facilities for subculturing by the trainee were provided on the ship. This generous offer was eventually declined by the "authorities" (if that is the correct word, Mr. Editor) in Canberra on the ground that it would not be safe to allow this strain of microorganism entrance to this country.

Possibly Dr. James is aware of a more scientifically sound outlook at present.

Yours, etc.,

Waterfall Sanatorium, J. A. R. MURPHY.
Waterfall,
New South Wales.
June 17, 1946.

BLOOD LOSS IN CÆSAREAN SECTION.

SIR: Whilst very interested in Dr. Benson's article (THE MEDICAL JOURNAL OF AUSTRALIA, June 15, 1946), I would like to point out that the cases in the series are hardly comparable. First, in the selection of cases, the series delivered by Cæsarean section included cases of ruptured uterus, *placenta prævia* and preeclampsia. These conditions are apt to lead to a greater blood loss in themselves apart from any consideration of the method of delivery. The last-named condition especially, and the others to the extent of the increased blood loss, would tend to depress the plasma protein values. Secondly, Dr. Benson gives no information of the type of anæsthesia employed for the cases of Cæsarean section. Probably the majority of them had general anæsthetics, all of which, to a greater or lesser degree, would have a twofold effect; first, they decrease the contractility of the uterus, thereby increasing the blood loss, and secondly, they are toxic to the liver and would tend to depress the rate of recovery of the plasma protein. It would be interesting to see a similar set of results from a series of Cæsarean sections performed under regional analgesia.

Yours, etc.,

Coonamble, K. H. BROOME.
New South Wales,
June 19, 1946.

Post-Graduate Work.

COURSES IN OBSTETRICS AND GYNÆCOLOGY AT BRISBANE.

THE University of Queensland Post-Graduate Medical Education Committee announces that the following facilities are available for post-graduate instruction in obstetrics and gynæcology:

1. A continuous series of three-weekly terms as supernumerary resident medical officer (or officers) at the Brisbane Women's Hospital under the supervision of the Professor of Obstetrics. Resident supernumeraries share in the work of the hospital. These facilities are intended for ex-service medical officers.
2. A series of lectures in obstetrics and gynæcology extending over two or three weeks as part of the second general revision course to commence shortly.
3. A series of tutorial classes in the relatively more advanced aspects of obstetrics and gynæcology, suitable for candidates intending to present themselves for membership of the Royal College of Obstetricians and Gynæcologists at the forthcoming examination in February, but also available to any practitioner desiring to attend. Tuition will be given in the relevant anatomy, embryology, physiology and endocrinology, and in the clinical, surgical and pathological aspects of the subject.

The fee for the tuition course will be £20, and classes will commence in July. Applications for enrolment, accompanied by a remittance for the amount of the fee, should be made to Dr. P. H. Macindoe, Secretary, the University of Queensland Post-Graduate Medical Education Committee, the Medical School, Herston Road, Fortitude Valley, Brisbane.

Obituary.

REDFORD JOHN WRIGHT-SMITH.

WE are indebted to Dr. Victor Hurley for the following appreciation of the late Dr. Redford John Wright-Smith.

Dr. Redford John Wright-Smith, who died suddenly in Melbourne on May 5, 1946, was born in 1896, and was at the height of his career as a pathologist and morbid anatomist at the time of his death.

After leaving Scotch College, Melbourne, he enlisted as a private in the First Australian Imperial Force and served overseas. At the termination of the war, while waiting to return to Australia, he commenced his medical course at King's College, London. On his return to Australia he completed his medical course at the Melbourne University, and after taking a high place in the final honours examination in 1924 he was appointed resident medical officer at the Royal Melbourne Hospital, and was a registrar the following year.

In 1927 he obtained the degree of M.D. (Melbourne), and directed his work chiefly towards pathology. He commenced his career as a pathologist first as a resident pathologist and later as non-resident pathologist at the hospital, working under Dr. Crawford Mollison, with whom he was very closely associated for the rest of his career.

In 1934 he went abroad and worked for some time with Professor H. M. Turnbull and Professor W. Bulloch at the London Hospital, and also with Professor Wood, of the Bernhard Bowen Institute of Pathology.

On his return to the Royal Melbourne Hospital he threw himself with enthusiasm into the work of building up and extending the pathological museum of the hospital. Specimens were selected and mounted especially for the purposes of clinical teaching, and accompanying each specimen were outlined the essential features of the clinical history of the case. He introduced several new departures, most of which were designed to correlate the clinical with the pathological work of the hospital. In this he achieved auspicious success, and the opportunities provided were largely used and appreciated by the staff and by the students.

In the new hospital at Parkville the increased accommodation and facilities provided for his department offered still further scope for his work, which he quickly took advantage of. The hospital has recently commemorated his work by naming after him the museum for which he was so largely responsible.

His weekly demonstrations of interesting specimens, with a running commentary on the clinical histories, were largely attended by members of the honorary and resident staffs, and became a feature of the work of the hospital. He was able to draw on an experience of more than 13,000 personally conducted autopsies of which detailed clinical pathological and histological observations had been carefully recorded. He continued also to maintain a close contact with clinical medicine. Because of his unique experience and ready recollection of the salient features of rare or unusual cases, his opinion was highly valued and frequently sought by his colleagues in difficult and obscure cases.

In addition to working under Dr. Mollison at the hospital, he also assisted him as coroner's surgeon and later succeeded him in this work in which he established a high reputation, both in the medical and in the legal professions, as an expert medical witness in forensic and medico-legal cases. He also succeeded Dr. Mollison in 1943 as Lecturer in Forensic Medicine at the Melbourne University.

He was a Fellow of the Royal Australasian College of Physicians, and also took an active part in the formation of the Medico-Legal Society of Victoria, of which he was one of the joint secretaries for several years. Much of the success of the society, in which opportunity is provided for the interchange of views between lawyers and doctors and for a better understanding of the problems in which they are mutually interested, is largely due to the energy and enthusiasm he put into this work.

He did a great deal of the editorial work in connexion with the publication of the *Proceedings* of the society, and he also acted in a similar capacity for *The Royal Melbourne Hospital Clinical Reports*.

With his many other activities during the war years he found time to do a good deal of work for the services, and held the rank of wing commander in his appointment as consultant pathologist to the medical services of the Royal Australian Air Force.

Among his outside interests he took a special interest, as an ex-serviceman of the 1914-1918 war, in the activities of the Legacy Club. He was a keen golfer and was a regular playing member of the Metropolitan Golf Club, where he played a more than usually good game the day before his death.

His sudden and unexpected death has deprived the Melbourne Medical School of an able and experienced worker whose place will be very difficult to fill.

The sympathy of his many friends is extended to his widow and four children in their great loss.

EUGEN HIRSCHFELD.

WE regret to announce the death of Dr. Eugen Hirschfeld, which occurred on June 18, 1946, at Brisbane.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Makinson, Jill, provisional registration, 1946 (Univ. Sydney), 45, Abbotsford Road, Homebush.
Johnson, Maurice Herbert, M.B., B.S., 1943 (Univ. Sydney), 49, New South Head Road, Vaucluse.
Marsden, Hugh Ernest, M.B., B.S., 1941 (Univ. Sydney), Prince Henry Hospital, Little Bay.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Barbour, John Gordon, M.B., B.S., 1945 (Univ. Sydney), 6, Fitzwilliam Road, Vaucluse.
Bell, Betty Jeanette, M.B., B.S., 1945 (Univ. Sydney), 4, Gipps Street, Wollongong.
Chapman, Herbert Owen, M.B., Ch.M., 1907 (Univ. Sydney), 320, Piper Street, Bathurst.
d'Apice, Mary Dorothy, M.B., B.S., 1945 (Univ. Sydney), 28, Wolseley Road, Point Piper.
Davidson, Roger Madgwick, M.B., B.S., 1946 (Univ. Sydney), Marrickville District Hospital, Marrickville.
Flannery, Brian Peter, M.B., B.S., 1943 (Univ. Sydney), 28, Melrose Parade, Clovelly.
Giblin, William Eric, junior, M.B., B.S., 1945 (Univ. Sydney), Wahroonga Avenue, Wahroonga.
Hendry, Peter Ian Alexander, M.B., B.S., 1939 (Univ. Sydney), 16, Vernon Street, Strathfield.
Herlihy, William Francis, M.B., B.S., 1945 (Univ. Sydney), 138, Victoria Street, Ashfield.

Holland, Edward Henry, M.B., B.S., 1946 (Univ. Sydney), 98, Remly Street, Lakemba.
Hook, Reginald Harley, M.B., B.S., 1946 (Univ. Sydney), 19, Julia Street, Ashfield.
Hume, Ian Hamilton, M.B., B.S., 1945 (Univ. Sydney), 26, Woonona Avenue, Wahroonga.
Lane, Melva Joyce, M.B., B.S., 1945 (Univ. Sydney), 3, Chevron, 8, Dalhousie Street, Haberfield.
Nowland, Reginald John, M.B., B.S., 1945 (Univ. Sydney), 428, Darling Street, Balmain.
Phillips, Garth Jowett Blunden, M.B., B.S., 1942 (Univ. Sydney), Lake Crescent, Teralba, New South Wales.
Redshaw, Joan Margaret, M.B., B.S., 1944 (Univ. Sydney), 7, Gerald Avenue, Roseville.
Scobie, Roden Crichton, M.B., B.S., 1934 (Univ. Sydney), 201, Macquarie Street, Sydney.
Selby, George, provisional registration, 1946 (Univ. Sydney), 36, Dudley Road, Rose Bay.
Thomas, Ian Davies, provisional registration, 1946 (Univ. Sydney), 71, Woniora Road, Hurstville.

◆

THE FEDERAL MEDICAL WAR RELIEF FUND.

The following contributions to the Federal Medical War Relief Fund have been received:

Western Australia.

John Day, £10 10s.
H. E. H. Ferguson, £10.
J. C. Bennett, S. L. Harke, A. S. Johnson, W. S. Muir, W. P. White, W. H. Godby, £5 5s.
D. J. Oldmeadow, A. M. Clark, £3 3s.
Total: £58 6s.
Grand total: £12,492 15s. 8d.

◆

Books Received.

"Lewis's 1844-1944: A Brief Account of a Century's Work"; 1945. London: H. K. Lewis and Company Limited. 8¾" × 6½", pp. 98, with illustrations. Free on application.

"A Complete Outline of Fractures Including Fractures of the Skull", by J. Grant Bonnin, M.B., B.S. (Melbourne), F.R.C.S. (England); Second Edition; 1946. London: William Heinemann (Medical Books) Limited. 8¾" × 5½", pp. 672, with many illustrations. Price: 30s. net.

"Human Torulosis: A Clinical, Pathological and Microbiological Study with a Report of Thirteen Cases", by Leonard B. Cox, M.D. (Melbourne). M.R.C.P. (Edinburgh), F.R.A.C.P., and Jean C. Tolhurst, M.Sc. (Melbourne); 1946. Melbourne: Melbourne University Press. 9¾" × 7¼", pp. 161, with illustrations. Price: 25s.

"These Small Glories", by Jon Cleary; 1946. Sydney, London: Angus and Robertson Limited. 7¼" × 4¾", pp. 150. Price: 6s.

"The Principles of Anatomy: An Introduction to Human Biology", by A. A. Abbie, M.D., B.S., D.Sc. (Sydney), Ph.D. (London); Second Edition; 1946. Sydney, London: Angus and Robertson Limited. 8½" × 5½", pp. 374, with many illustrations. Price: 12s. 6d.

"Sir W. Arbuthnot Lane, Bart., C.B., M.S., F.R.C.S., His Life and Work", by W. E. Tanner, M.S., F.R.C.S.; 1946. London: Ballière, Tindall and Cox. 8½" × 5½", pp. 202, with one photograph. Price: 15s.

"101 Clinical Demonstrations to Nurses", by Hamilton Bailey, F.R.C.S. (England); Second Edition; 1946. Edinburgh: E. and S. Livingstone Limited. 8½" × 5½", pp. 136, with many illustrations, some coloured. Price: 10s. 6d.

◆

Medical Appointments.

Dr. C. G. Thompson has been appointed Medical Referee, Launceston, Tasmania, in accordance with the provisions of Section 15 (2) of the *Workers' (Occupational Diseases) Relief Fund Act*, 1928.

Dr. I. H. Martin has been appointed Resident Medical Officer for Mental Institutions in the Hospitals Department, Adelaide.

Dr. C. Christie has been appointed Medical Officer of Health, Dumbleyung Road Board, Western Australia.

Dr. A. J. Beaumont has been appointed Medical Officer of Health, Municipality of Geraldton, Western Australia.

Dr. B. O. Bladen has been appointed Medical Officer of Health, Guildford Municipality, Western Australia.

Dr. J. A. Rolland and Dr. T. L. McLarty have been appointed members of the Board of Optical Registration, Adelaide.

Diary for the Month.

July 2.—New South Wales Branch, B.M.A.: Council Quarterly.
July 3.—Victorian Branch, B.M.A.: Branch.
July 3.—Western Australian Branch, B.M.A.: Council Meeting.
July 5.—Queensland Branch, B.M.A.: Branch Meeting.
July 9.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
July 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
July 9.—New South Wales Branch, B.M.A.: Organization and Science Committee.
July 11.—South Australian Branch, B.M.A.: Council Meeting.
July 12.—Queensland Branch, B.M.A.: Council Meeting.
July 16.—New South Wales Branch, B.M.A.: Medical Politics Committee.
July 17.—Western Australian Branch, B.M.A.: General Meeting.
July 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
July 18.—Victorian Branch, B.M.A.: Executive Meeting.
July 23.—New South Wales Branch, B.M.A.: Ethics Committee.
July 24.—Victorian Branch, B.M.A.: Council Meeting.
July 25.—South Australian Branch, B.M.A.: Council Meeting.
July 25.—New South Wales Branch, B.M.A.: Branch Meeting.
July 26.—Queensland Branch, B.M.A.: Council Meeting.
Aug. 2.—Queensland Branch, B.M.A.: Branch Meeting.
Aug. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.

◆

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

◆

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.

Microscopes

By leading British and American makers, new and second hand. **Diagnostic Sets,** Ophthalmoscopes, Oil Immersions, Micro-Accessories, Stains, Reagents, etc.

BOOKS: Medical and Science Text-books, Natural History, Early Australian, new and second hand.

Catalogues free.

WANTED TO BUY: Microscopes, Survey Instruments, Sextants, Telescopes, etc. *Good Prices, Prompt Cash.*

N. H. SEWARD PTY. LTD.
"Optical House",
457 Bourke St., Melbourne, C.1.

BRITISH MEDICAL HALL COMPANY LIMITED

178 North Terrace, Adelaide

Sales and purchases of practices, locums, assistants, fire, life, motor car insurance.

Practices with substantial guarantees available, also assistantships.

Particulars supplied in confidence.

Consult this agency on all medical agency services.

ALFRED HOSPITAL, COMMERCIAL ROAD, PRAHRAN, VICTORIA.—Eleven (11) appointments as Honorary Dental Surgeons on the staff of the Alfred Hospital having terminated, applications to fill the vacancies are invited, and will be received by the undersigned until noon, Saturday, 13th July, 1946. The appointments will be for a period of five years, and the retiring members are eligible for reappointment. Forms on which applications are to be made may be obtained at the hospital. Personal canvass will disqualify.—C. G. RANKIN, Manager and Secretary, June 20, 1946.

THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, PITT STREET, REDFERN.—Applications are invited from duly qualified medical practitioners for the following position on the honorary medical staff: Honorary Physician. In the event of an Honorary Assistant Physician being appointed to the senior position, the junior position automatically becomes vacant. Applications in duplicate on the prescribed form available at the hospital, together with copies of testimonials, to be in the hands of the undersigned not later than Saturday, 13th July, 1946.—(Sgd.) MARY C. PUCKEY, Chief Executive Officer and Medical Superintendent.

Wanted to Buy
Quality Guns and Rifles.
Highest prices given.
We also exchange guns.
SIL ROHU, 143 Elizabeth St., Sydney
Quality Firearms & Fishing Tackle
'Phone MA 3540.

SYDNEY HOSPITAL: HON. OPHTHALMIC CLINICAL ASSISTANTS. — Applications, closing 24th July, are invited for three vacancies for Hon. Clinical Assistants in the Ophthalmological Department to the 31st December, 1946. Applicants must complete a Sydney Hospital application form, which is obtainable from the Medical Superintendent, and should attach a copy of three credentials. Canvassing of members of Board will disqualify. Applications to be addressed "The President, Sydney Hospital, Sydney", and envelope endorsed "Hon. Medical Staff Application". — A. F. BURRETT, Secretary.

APPLICATIONS are invited for the position of Assistant to the Rheumatoid Arthritic Department at this hospital. The successful applicant will be appointed as Research Scholar in Rheumatoid Arthritis. Honorarium, 100 guineas per annum. Application forms and particulars of duties *et cetera* may be obtained from the Superintendent, May Sheehan, Secretary and Executive Member, N.S.W. Community Hospital, Moore Park (FA 2196).

Medical Practitioners anticipating release from War Service may secure details of Medical Practice Opportunities from

ALLAN GRANT
Medical Agent
54 Collins St., Melbourne, C.1
'Phone: Cent. 4171
Telegrams: "Allgra, Melb."

W. RAMSAY (Surgical) Pty Ltd

SURGICAL INSTRUMENTS AND HOSPITAL APPLIANCES

Latest Medical and Surgical Books Available

Sole Australasian Agents
"BECKS" MICROSCOPES

W. RAMSAY (Surgical) Pty. Ltd.

340 Swanston St., Melbourne
18 Howard Street, Perth
11 Austin Street, Adelaide

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA.—Applications are invited and will be received by the undersigned until 2nd July, 1946, for appointment to the honorary medical staff: Thoracic Surgeon, Ophthalmologist, Anæsthetist, Radiotherapeutist; Radiodiagnostician. The above appointments are for a term of five years dating from 1st March, 1946. Application forms are obtainable from the undersigned and should be accompanied by copies of testimonials.—A. F. CAMERON, Manager and Secretary.

BRITISH MEDICAL AGENCY OF QUEENSLAND PTY. LTD.

B.M.A. HOUSE, 225 WICKHAM TERRACE, BRISBANE, B 17

Doctors desiring Practices, Partnerships, Assistantships or Locums should apply now for advice and/or particulars.

S. N. COBBOLD, Manager, B 9597. After hours F 9533. Telegrams: "Medicine", Brisbane.

British Medical Agency of Victoria Pty. Ltd.

SALES AND PURCHASE of Medical Practices negotiated.

SPECIAL CONSIDERATION AND ADVICE provided for ex-service Medical Officers.

LOCUM TENENS AND ASSISTANTSHIPS arranged.

FULL DETAILS ON APPLICATION

MANAGER: G. FEELY

340 Swanston Street, Melbourne. Telegrams: "Medagency", Melb. 'Phones: FJ 4123, 4124. After hours: WM 3847.

British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY

CONSULT YOUR OWN AGENCY ON ALL MEDICAL AGENCY SERVICES

Sales and Purchases of Practices

Advice and recommendation rendered to enquirers.

INSURANCES

Fire, Life, Sickness and Accident, Motor Car, Workers' Compensation, etc.

COPYING, TYPING

Duplicating, MSS., Meeting Notices, etc.

Financial Assistance

available in approved cases to facilitate transfers.

Telephones B 4159
XA 2644 (After Hours)

Telegrams: "Locumtens Sydney".

C. R. STRANGE,
Manager and Secretary.

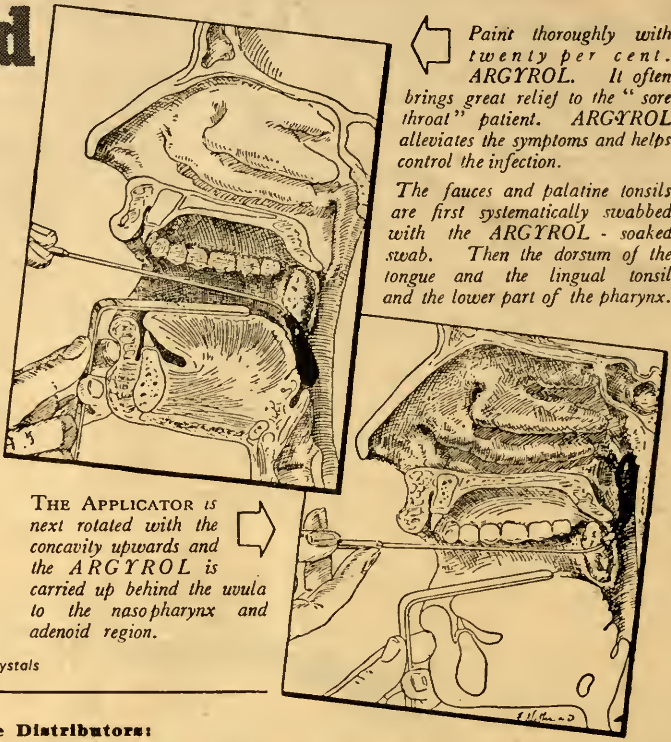
Pharyngitis and Tonsillitis

effective therapy with ARGYROL

BRAND SILVER VITELLIN

ARGYROL has proved its value for controlling infections of the nose and throat. Many eminent authorities have noted that the best results are obtained when ARGYROL is specified in all prescriptions. There are sound chemical and physical reasons for this. The silver in ARGYROL is in a much finer state of colloidal dispersion, also there is a far greater degree of Brownian movement, which logically must result in greater therapeutic activity. This is not true of ordinary mild silver proteins, for ARGYROL is the only silver salt that does not tend to become irritating with increased concentration. SPECIFY ARGYROL IN ALL PRESCRIPTIONS.

ARGYROL is issued in bottles of 1 oz. crystals



Paint thoroughly with twenty per cent. ARGYROL. It often brings great relief to the "sore throat" patient. ARGYROL alleviates the symptoms and helps control the infection.

The fauces and palatine tonsils are first systematically swabbed with the ARGYROL - soaked swab. Then the dorsum of the tongue and the lingual tonsil and the lower part of the pharynx.

THE APPLICATOR *is next rotated with the concavity upwards and the ARGYROL is carried up behind the uvula to the nasopharynx and adenoid region.*

Sole Distributors:

FASSETT & JOHNSON, LTD., 36-40 Chalmers Street, Sydney

THERE IS ONE AND ONLY ONE "ARGYROL", MADE ONLY BY A. C. BARNES COMPANY

Sheer Delight

LUSTRE LINGERIE is refreshingly feminine in its daintiness. In soft, lovely textures created for long wear, the distinguished LUSTRE sets are exclusively designed in the fashionable colours.

Lustre

LT 1/46

KEEPING HIM ON THE JOB—

Hæmorrhoids rank comparatively high among the causes of lost "man hours." To-day, more than ever, this should be a matter of concern to physicians.

Whenever non-surgical treatment is indicated, Anusol may be used with the knowledge that it will afford the kind of relief likely to keep the patient on his job. By their emollient properties Anusol Suppositories reduce inflammation, alleviate pain and check the bleeding. They contain no narcotic or anæsthetic to give the patient a false sense of security.

William R. Warner & Co. Pty. Ltd.,
508-528 Riley Street, Sydney, N.S.W.

Anusol
Hæmorrhoidal
Suppositories
Suppositoria haemorrhoidalia Anusol

ANUSOL

Hæmorrhoidal Suppositories

Gently Borne

ON TO ITS GOAL

The rhythmic movement of the gentle wave carries the fallen leaf to the shore without harm to its fragile structure. Similarly, the gentle rhythmic movement of the peristaltic wave induced by AGAROL assures certain evacuation of the already softened intestinal contents.

High viscosity agar-emulsified mineral oil makes possible the softening of the intestinal contents and thus prepares the ground for the peristaltic stimulus provided by the highly purified white phenolphthalein present in Agarol. Thus Agarol adequately furnishes the three principal requirements for the relief of constipation: softening, lubrication, peristaltic stimulation.

Agarol is supplied in 6 and 16 ounce bottles If you desire a trial supply, please write us on your letterhead.

AGAROL

William R. Warner & Co. Pty. Ltd.,
508-528 Riley Street, Sydney, N.S.W

ANDREW'S PHARMACEUTICAL PREPARATIONS

BROMACLIMAN

for the therapy of menopausal disturbances and climacteric disorders. An excellent sedative and antispasmodic, which gives instant relief, acting not only on the heart and vascular system, but also on the central nervous system.

The following well-balanced and effective formula is a result of extensive and continuous specialisations over a long period:

℞:	Bromised Ovary/with 20% Brom.	gr. $\frac{3}{4}$
	Theobromine Alkaloid	„ $\frac{3}{4}$
	Calcium Lactate	„ 3
	Benzyl Succinate	„ $\frac{1}{2}$

Obtainable at all leading chemists, issued in bottles of 50 tablets.

ANDREW'S LABORATORIES, SYDNEY

MANUFACTURERS OF DRUGS AND FINE CHEMICALS:

Adrenalin Synthetic
Cholesterol
Dehydrocholic Acid
Hexoestrol
Sodium Desoxycholate
Stibophen
Stilboestrol
Sulfaguanidine
Thiouracil
Thiourea
Lecithin (Brain)
Analytical Reagents
pH-Indicators
Spot Test Reagents, etc.,
D.D.T.

MANY DOCTORS
have adopted the wise policy of insuring everything with the

B. M. I.
British Medical Insurance
Co. of Vic. Ltd.

Founded in the interests of the Medical Profession, surplus profits are devoted to the Medical Society of Victoria.

All Classes of Insurance Transacted:

FIRE—Homes, Cars, Furniture, Equipment. BURGLARY—Contents of Homes, Instruments, Cars, Jewellery, Furs. WORKERS' COMPENSATION. PERSONAL LUGGAGE. PERSONAL ACCIDENT. COMPULSORY THIRD PARTY. WAR DAMAGE.

DIRECTORATE OF THE B.M.I.

Dr. C. H. Mollison (Chairman), Dr. L. Latham, Dr. J. Newman Morris, Dr. F. Kingsley Norris, Mr. T. E. V. Hurley.

THE BRITISH MEDICAL INSURANCE CO. OF VIC. LTD.
389-395 Little Flinders Street, Melbourne, C.1.
'Phone: M 1871 (9 lines).

X-RAYS
prove their comfort

X-rays reveal the scientifically accurate fitting of Abbey orthopædic shoes—and demonstrate the reason why these famous shoes have been widely endorsed by the medical profession. Stocks, however, are still short, and until conditions return to normal must be restricted to those who urgently need their unique comfort.

ABBEY ORTHOPÆDIC
SHOES

316 George Street, 53 Castlereagh Street,
224 Pitt Street.

Medical Practices, etc.

Unopposed practice, western district. Average cash taking £2,200. Comfortable home to rent. Price £1,700. Terms. Reduced price for cash.

2. Southern city. Cash take average over 6 years £3,300. Residence to rent. Goodwill £3,000. Terms.

Wanted.

Doctor experienced in ophthalmology wishes to obtain position as assistant ophthalmic surgeon.

All Enquiries Confidential.

GOYDER, SON & CO.,
Medical Agents,
Cathcart House, 11c Castlereagh Street, Sydney. BW 7149.
After Hours: XA 1749.

The name of Goyder has been associated with Medical Agency since 1902.

Australian Physiotherapy Association

(Australasian Massage Association)
NEW SOUTH WALES

Massage, Remedial Exercises and Medical Electricity.
Occupational Therapy.

Members are fully trained in these subjects and work only under the direction of a registered medical practitioner.

Further information obtainable from the General Secretary,

MISS E. P. EVANS,
Manchester Unity Building,
185 Elizabeth Street, Sydney.
(MA 2031.)

TAMBO HOSPITALS BOARD. Vacancy for Medical Officer. Salary £700, with right of private practice. Other emoluments include amounts from Shire Council and Education Department. Nice residence recently painted inside and outside, partly furnished, and fitted with electric light and water available. Four (4) weeks' recreation leave allowed each year.—P. A. PESTORIUS, Secretary.

WESTERN AUSTRALIAN PRACTICES

NEILSON HANCOCK,
MEDICAL AGENT

Full details of metropolitan and country practices for sale will be supplied by air mail on application.

Medical Practitioners anticipating release from War Service may secure details of Medical Practice Opportunities from

NEILSON HANCOCK,
205 St. George's Terrace, Perth
Telegraphic or Cable Address: "Westgraph, Perth."

BRITISH MEDICAL ASSOCIATION

New South Wales Branch

Assistant Medical Secretary

APPLICATIONS are invited for the position of ASSISTANT MEDICAL SECRETARY **of the** New South Wales Branch **of the** British Medical Association.

The position is a whole-time one. The holder will be an official of the Branch and will be required to act as Assistant to the Medical Secretary.

Applicants, who should possess organizing and administrative capabilities, must be legally qualified medical practitioners and members of the British Medical Association and preferably should have some years' experience of practice.

Conditions of Service.—Salary range £1,250 to £1,400 *per annum* (annual increments £50); in addition provision for superannuation and three weeks' leave *per annum.*

Applications, with full particulars of qualifications, experience, age, etc., should be addressed to the President, New South Wales Branch, British Medical Association, 135, Macquarie Street, Sydney, to arrive not later than August 9, 1946.

ATHERTON HOSPITALS BOARD. — Applications are called for the position of Medical Superintendent, Herberton Hospital. Salary £600 minimum, £750 maximum, with the right of private practice, except within the hospital, with basic wage increase £32 and northern allowance £48 added and with £2 2s. per week accommodation allowance until such time as accommodation at the hospital can be provided. The Medical Superintendent to visit Ravenshoe fortnightly and Mount Garnet monthly, or as required by the Board for attendance on public patients. Mileage at the rate of 1s. per mile to be allowed provided that the Medical Superintendent provides his own vehicle. The successful applicant will be provided with free air travel to Cairns and will be required to enter into an agreement to serve a minimum of twelve months. The successful applicant to take up duties on the 1st August. Applications close with the Secretary on the 10th July, 1946.—W. H. SHERRIN, Secretary, Atherton Hospitals Board.

YOUNG WOMAN SECRETARY would like to keep the books of a medical practitioner in or near Sydney in her off duty hours if she could come to some arrangement with him regarding board and lodging. References available. Apply No. 45, c.o. THE MEDICAL JOURNAL OF AUSTRALIA, Seamer St., Glebe, Sydney, N.S.W.

ST. VINCENT'S HOSPITAL, SYDNEY. — Applications, addressed to the Superior General at the hospital, are invited for the following vacancies on the honorary staff. Each application must be accompanied by a certificate of birth of the applicant if this has not already been lodged. One Ophthalmic Surgeon, One Assistant Ophthalmic Surgeon. Applications are also invited for the following positions for a period of one year: Four Clinical Assistants to Ophthalmological Department. Applications close on 20th July, 1946.

SYDNEY HOSPITAL: HON. MEDICAL STAFF. — Applications, closing 24th July, are invited for the following new appointments: (*A*) One Hon. Relieving Assistant Aural Surgeon. Applications for this appointment will be received on the following terms and conditions: (1) Term—4 years from 1st August, 1946. (2) Should any successful applicant who is still on war service be unable to take up the appointment on the due date, the Board will grant leave until his demobilization. (3) Successful applicants will be required, after appointment, to lodge with the hospital a copy of their birth certificate. (4) Applicants must complete a Sydney Hospital application form, which is obtainable from the Medical Superintendent, and should attach one copy of three credentials. (5) Applicants for this appointment should indicate whether they are willing to accept an appointment as follows, if unsuccessful in the senior vacancy. (*B*) One Temporary Hon. Relieving Assistant Aural Surgeon. (6) Term—12 months from 1st August, 1946. (7) Canvassing of members of Board will disqualify. (8) Applications to be addressed "The President, Sydney Hospital, Sydney", and envelope endorsed "Hon. Medical Staff Application".—A. F. BURRETT, Secretary.

CHILDREN'S HOSPITAL, CARLTON.—The committee invites applications, with testimonials, from legally qualified medical practitioners for the position of Medical Superintendent of the Orthopædic Section of the hospital at Frankston. Appointment in first place is for a period of two years. Commencing salary £1,000 per annum plus board and residence. Full particulars of duties are obtainable from the undersigned, with whom applications close on Saturday, July 13, 1946. By order.—H. BARRETT, Manager and Secretary, Carlton, N.3, Victoria, June 14, 1946.

Books

on

Science
Medicine
Technic

GRAHAME BOOK COMPANY
PRUDENTIAL BUILDING
39 MARTIN PLACE, SYDNEY, N.S.W.

Service for Doctors

WATSON VICTOR
LIMITED

Branches in all Capital Cities of Australia and New Zealand.

No. 574.—N.S.W. country opposed practice taking over £2,000. Lodges £200, mids. 70, general and private hospitals. Modern residence, rent £2 10s. weekly. Goodwill £1,400.

No. 581.—Sydney suburban practice taking £3,000. Half-share available young ex-service practitioner. Purchaser will need find suitable residence.

No. 589.—N.S.W. country unopposed coastal practice taking over £1,500. Few lodges, mids. 50, district hospital. Modern residence and goodwill for sale. Terms available.

No. 592.—Sydney suburban practice taking £3,300. Mids. 40, lodges 400. Modern brick residence to let, vacant possession. Price goodwill £3,000.

No. 601.—N.S.W. base hospital town taking over £2,500. Mids. 60, lodges. Modern brick cottage, £4 week, vacant possession. Price goodwill £2,000. Terms available.

Locum tenens. Reliable experienced practitioners available at short notice.

Particulars in Confidence.

WATSON VICTOR
LIMITED
LICENSED BUSINESS AGENTS
Watson House, Bligh Street, Sydney.
Telephone: BW 4433.

PERCIVAL D. OLLÉ

M.S.R., B.P.A., N.R. (Eng.),
PHYSIO-THERAPIST.

Short and Ultra-Short Wave, 6 to 20 Metres. At rooms only. Ultra-Violet, Infra-Red, Diathermy, Iontophoresis.

Physical injuries treated.
"Wembury",
42 Elizabeth Street, Ashfield.
Telephone: UA 1097.

SPEECH THERAPY.

Remedial Treatment for Reading, Writing, Speech and Voice Disorders.

MISS WRAY, A.S.S.T., London.
Speech Therapist to R.A.H.C., Sydney.
231 Macquarie Street, Sydney.
'Phone: B 4650.

CHIROPODY

MASTER CHIROPODIST,
Room 19, Fourth Floor, Challis House,
10 MARTIN PLACE, SYDNEY
'Phone: BW 6642.

T. R. CHRISTIE,
Diploma Scientific Chiropody.

NEOCAL

Each tablet contains:

DI-CALCIUM PHOSPHATE	gr. 7.5
FERROUS SULPHATE	gr. 0.33
VITAMIN B_1	100 I.U.
VITAMIN D	400 I.U.

100 Tablets
NEOCAL
DI-CALCIUM PHOSPHATE
FERROUS IRON
with
VITAMINS B, and D
G.P.

SUPPLIED IN BOTTLES OF
100 AND 1,000 TABLETS

PRICE TO PATIENTS
6/-
PER 100 TABLETS

G.P.
PTY. LTD.
Manufacturers of Standardized
Biological and Pharmaceutical Products
Laboratories and Head Office:
65 Macquarie Street, Sydney, Australia.
Telephone: B 6257 (3 lines).
Telegraphic and Cable Address: Glandular, Sydney.

Wholly set up, printed and published at the Printing House, Seamer Street, Glebe, Sydney, N.S.W., by Arthur Frederick Roots Simpson, of Fairholm Street, Strathfield, New South Wales, on behalf of the Australasian Medical Publishing Company Limited, Seamer Street, Glebe, Sydney, New South Wales.